



Abt Associates Inc.

Cambridge, MA  
Lexington, MA  
Hadley, MA  
Bethesda, MD  
Washington, DC  
Chicago, IL  
Cairo, Egipto  
Johannesburg, Sudáfrica

Abt Associates Inc.  
Suite 600  
4800 Montgomery Lane  
Bethesda, MD 20814-5341

## **Manual para Aves Ponedoras**

### **Apoyo a la Generación de Ingresos Locales (AGIL) Guatemala-CAP**

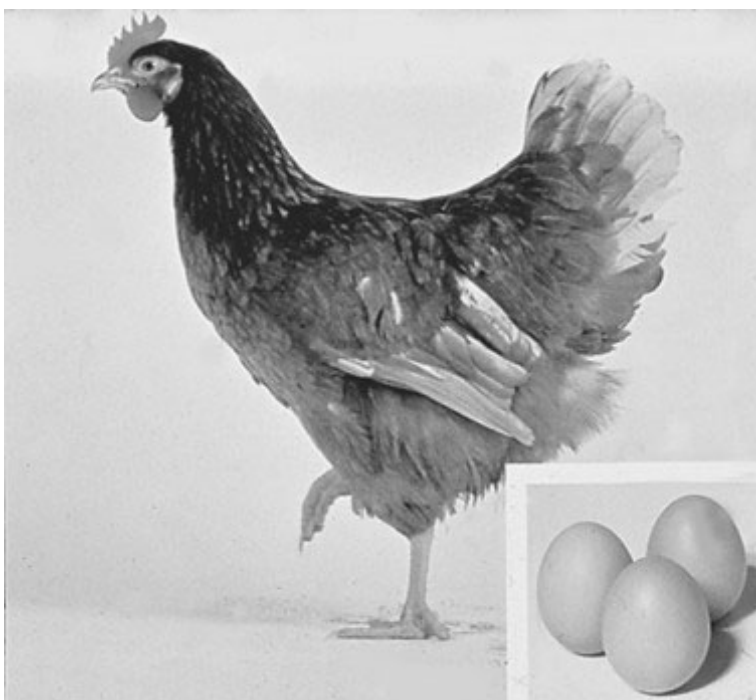
**Contrato #  
520-C-00-00-00035-00**

Junio 2003

*Elaborado para:*  
Agencia de los Estados Unidos  
para el Desarrollo Internacional/  
Guatemala  
1a Calle 7-66  
Zona 9  
Guatemala 010009

*Elaborado por*  
Christopher Reynolds

# Manual para Proyectos de Aves Ponedoras



 **AGIL**  
Apoyo a la generación de ingresos locales

Julio 2,003

# **Tabla de Contenido**

## **I. La Potencial de la Empresa**

- Resumen de Proyecto
- Proyecto de Aves Ponedoras- Modelo Pachay
- Ejemplo de Estudio Mercadeo

## **II. Infraestructura**

- Galera para 1,500 Gallinas Ponedoras (Tipo 1):  
Planos de Obra Civil  
Presupuesto
- Galera para 1,500 Gallinas Ponedoras (Tipo 2):  
Planos de Obra Civil  
Presupuesto

## **III. Análisis Económica**

- Resumen de Proyección para Cuatro Años:  
Iniciando con 500 Aves y Llegando a 1,500
- Proyección para Cuatro Años:  
Inicia con 500 Aves con Proyección a 1,500 Aves
- Flujo y Egreso para 500 Gallinas
- Cálculo de Tasa Interna de Retorno y Valor Actual Neto

## **IV. Anexos**

# I. La Potencial de la Empresa

**Resumen: Gallinas Ponedoras**

**Proyecto de Aves Ponedoras- Modelo Pachay**

**Ejemplo de Estudio Mercadeo**

## Proyecto de Gallinas Ponedoras

El modelo mejorado de AGIL se basa en los ya existentes modelos COKADI. Primero, debe determinarse si existe una organización (formal o informal) en el área. La mayoría de los proyectos AGIL (y COKADI) han sido establecidos a través de grupos de mujeres ya existentes. En el modelo COKADI, se requerían 500 gallinas como mínimo y cada una de las mujeres miembro debía trabajar 24 horas por turno (los turnos fueron establecidos en base al número de mujeres en el grupo) y los beneficios al final de cada ciclo eran destinados a



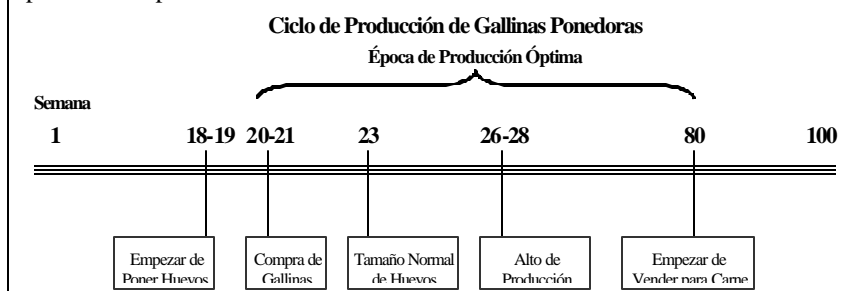
proyectos comunales. Posteriormente, los proyectos fueron utilizados como medios de desarrollo comunitario en vez de proyectos de carácter meramente económico.

El modelo básico y económicamente viable, se base en grupos de 20 a 25 mujeres con 1,500 gallinas. Naturalmente, un examen de mercadeo debe ser llevado a cabo en el área (aldea) y en sus

alrededores, incluyendo poblaciones cercanas, para determinar su potencial. No se recomienda iniciar estos proyectos en áreas cercanas a la ciudad o cerca de distribuidoras grandes de huevos.

Nociones sobre las gallinas ponedoras:

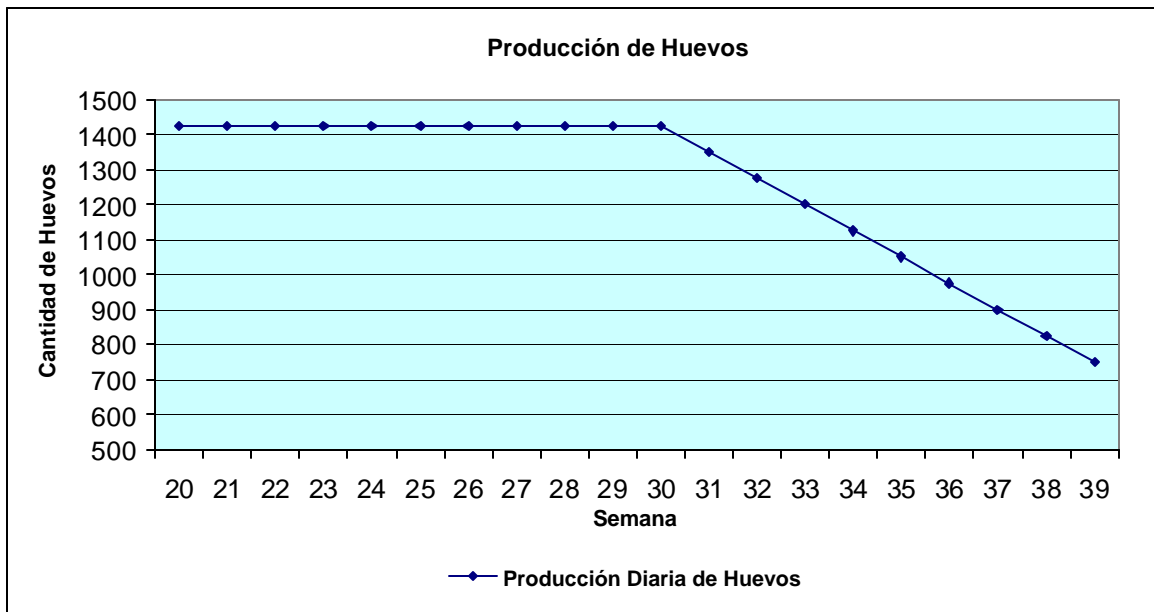
Las gallinas comienzan a poner huevos a partir de la decimioctava o decimonovena semana y continúan poniendo por 90 o 100 semanas. Sin embargo, este método no es rentable ya que comen más de lo que producen. La mayoría de gallinas son vendidas para el consumo después que han cumplido 80 semanas. Los polluelos son difíciles de cuidar, necesitan locales especiales y supervisión veterinaria continua. En los proyectos COKADI y AGIL, las gallinas fueron compradas a partir de la vigésima o vigésima primera semana. Estas gallinas han sido vacunadas por lo que la mortalidad de las mismas, es bastante baja. La variedad utilizada es conocida como "Lowman Brown", la cual es una especie muy productiva. Durante la etapa alta de su producción, cada gallina puede llegar a producir 28 huevos en un mes y la cantidad por grupo oscila entre 80 y 90. Al principio del ciclo productor, los huevos pueden ser pequeños (perlitas) o de doble yema. Los tamaños estándar son: pee wee, mediano, grande y extra grande. Después de las 23 semanas los tamaños comienzan a estandarizarse. Las gallinas del tipo "Lowman Brown" son gallinas más productivas, pero su tamaño puede ser de mediano a grande. Una gallina típica de esta clase, puede llegar a producir 300 huevos aptos para la venta durante su período productivo. Estas gallinas típicamente pasan por un período lento, donde la producción baja pero vuelve a subir nuevamente pasado este período.



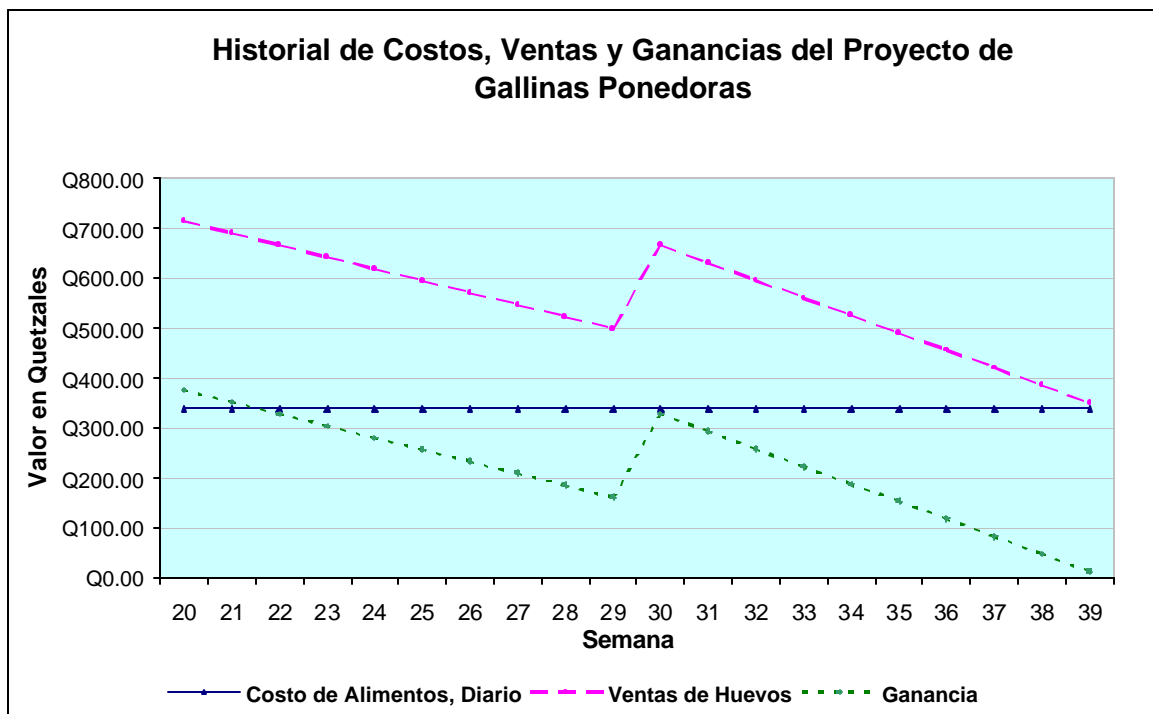
Los mayores aportes consisten en supervisor construcciones, proveer materiales para las mismas y la contratación de maestros de obra locales. El grupo provee labor básica local, y en muchos casos, las materiales esenciales para la construcción básica es de 10 por 15 metros con un costo de 218 Quetzales por metro cuadrado. La mayoría de materiales que deben ser comprado fuera de la comunidad, pueden ser encontrados en otras poblaciones cercanas. Las estructuras son construidas en módulos de 3 por 10, con 6 columnas de bloque, de 3 a 6 capas (dependiendo del clima)

de cemento y techo de zinc. Las paredes son terminadas con mesh o mallas de alambre y cortinas elaborados con sacos de fertilizante son utilizadas para protegerlas de clima inclemente. Los pisos

son cubiertos con 8 a 10 centímetros de aserrín, cáscara de café u otro material local similar. Los bebedores y comederos necesitan ser comprados. Si el agua es escasa en la población, un sistema simple de riego puede ser instalado utilizando tanques de 100-150 galones. Así mismo, una pequeña estructura de 1 por 1 se construye con el fin de ser utilizada como un pequeño “hospital”.



Aproximadamente en 50 semanas, 1,500 gallinas habrán puesto 400,000 huevos, siendo la mitad de ellos de un tamaño mediano, los cuales pueden ser vendidos por Q. 0.50 o más cada uno. Estas gallinas consumirán un promedio de 3.5 quintales mensuales de alimento por cada una de ellas, con un costo de Q. 95 por quintal. Deduciendo solamente el costo del alimento de la venta de los huevos sin tomar en cuenta ningún otro gasto, este proyecto produce alrededor de Q. 325 diario. Durante un periodo de 50 semanas las ventas netas podrían alcanzar Q. 200,000.



**APOYO A LA GENERACIÓN DE INGRESOS LOCALES (AGIL)**  
**PROYECTO DE AVES PONEDORAS**  
**MODELO PACHAY**

El modelo se basa en las experiencias adquiridas en la ejecución del proyecto de gallinas ponedoras por parte de la Asociación AMIDI, ubicada en la Aldea Pachay las Lomas..

El grupo de mujeres de Pachay las Lomas esta conformado actualmente por un grupo de 29 mujeres, de las cuales 23 iniciaron con un programa de 500 gallinas ponedoras. Después de seis meses cancelaron un primer crédito y posteriormente iniciaron con dos fases de 500 gallinas cada uno y finalmente con una fase de 1000 gallinas, actualmente manejan un total de 2000 gallinas ponedoras.

Para el manejo de los gallineros, las mujeres trabajan en turnos diarios individuales, por lo que cada miembro del grupo tiene que realizar su turno cada 15 días. A raíz del incremento en el número de aves se ha incrementado el trabajo, por lo cual ha sido necesario incrementar a dos galeristas cada turno. Al grupo se han integrado 6 nuevas socias, quienes están trabajando en cada turno acompañadas de una galerista con experiencia, lo cual se esta aprovechando para la transferencia de experiencias.

**El programa de granjas comunales, lleva la siguiente secuencia..**

1. Realización de reuniones con grupos potenciales para establecer el grado de avance en la organización y ratificar el deseo de iniciar con este tipo de trabajo organizado.
2. Para formalizar el proceso, la organización debe presentar una solicitud en la cual manifiesta su interes en la ejecución del programa y su compromiso de asumir la responsabilidad de participar en los diferentes procesos de capacitación y de dar adecuado seguimiento y mantenimiento al programa.
3. Se redacta y suscribe una carta convenio entre el programa y la organización interesada.
4. Se procede a la identificar un terreno para la ubicación de la galera o gallinero, el cual es un aporte del grupo interesado.
5. Se inicia con el proceso de construcción de la galera o gallinero. **(se utilizarán planos típicos tipo Pachay, con medidas de 10 x 15 metros)**, se asume que este gallinero puede dar albergue hasta 1500 gallinas (especificaciones:10 gallinas por metro cuadrado en clima frío y 8 gallinas por metro cuadrado en clima cálido)
6. Se inicia el proceso de capacitación, de lideres del grupo comunitario quienes deberán adquirir el compromiso de trasladar conocimientos y experiencias a los demás miembros del grupo.
7. Al estar construida la galera o gallinero, deberá desinfectarse utilizando una mezcla de cal y agua (encalado de paredes, piso y madera)
8. El grupo comunitario recibirá una dotación de 500 gallinas de 18 semanas, **(proyecto actualizado 1,500 gallinas)** que están en el periodo de inicio de postura, el cual alcanza promedios esperados de producción hasta las 22 o 23 semanas. Estas gallinas son compradas con fondos proporcionados por el programa (Q. 11,500.00), como capital semilla. **(El programa actualizado contempla una sola compra de 1,500 gallinas con un costo de Q. 37,500.00)** Las siguientes dos siguientes dotaciones serán entregadas en calidad de crédito con un interes del 18%. Se considera que después de la tercera

dotación el grupo estará en capacidad de hacer compras al contado para reponer las aves descartadas.

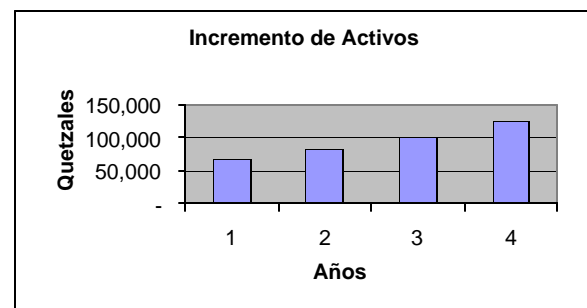
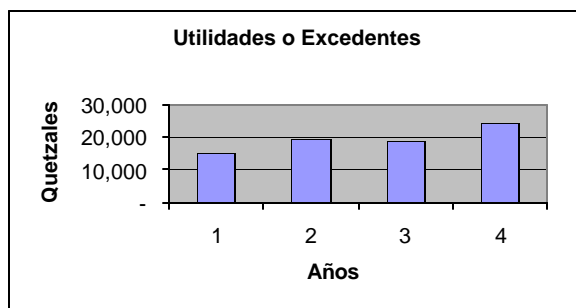
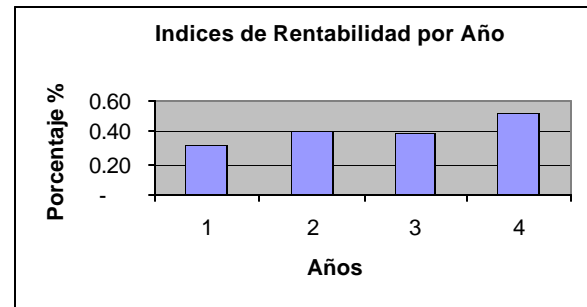
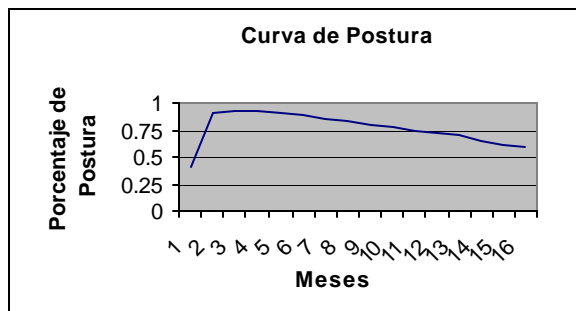
9. El grupo recibe Q. 3,500.00, como complemento del capital semilla para la compra de alimento para las aves para un periodo de cuatro semanas.. Posteriormente, la compra de concentrado deberá hacerse cada quince días con los fondos obtenidos en la venta de huevos, costales y gallinas de descarte..
10. La organización debe mantener y cubrir los costos del proyecto con la venta de la producción de huevos la cual se da de la siguiente manera: Desde la semana 23 a la semana 30 la producción de huevos se estima en un promedio 90%. Después de la semana 36, la producción comienza a decrecer dos puntos por mes hasta la semana 70).

## DATOS.

1. Costo de compra de cada gallina. Q. 23.00. **El costo actual es de Q. 25.00.**
2. Costo de venta de cada gallina o valor de descarte o desecho Q. 15.00.
3. Periodo productivo de las gallinas: De semana 18 a semana a semana 70, después de este periodo se venden como descarte.
4. De la semana 18 a la semana 23, la producción inicia de un 5%, con huevos pequeños (piwi), de manera ascendente hasta alcanzar en la semana 23, la productividad optima.
5. El periodo de alta productividad se establece entre la Semana 23 a la semana 36, con un nivel del 90%, de productividad, después de esa semana la producción comienza a decrecer hasta un 67%.
6. Costo del concentrado por Quintal. Q. 87.00 mas flete Q. 5.00. **(Costo actual Q. 97.00),**
7. Consumo diario por 500 gallinas, promedio 1.25. quintales diarios. Durante la semana 18 a 23 pueden consumir 1 quintal diario.
8. Los sacos vacíos del concentrado pueden venderse a mayoristas en Q. 0.90 la unidad. Individualmente se venden a Q. 1.00 cada uno. En otros casos los sacos son utilizados para el manejo y empaque de gallinaza, o se reparten entre los miembros.
9. Costo promedio de 1 huevo. Q. 0.30
10. Precio de venta promedio de cada huevo, entre Q.0. 35 y Q. 0.50
11. Los gastos de vitaminas, medicina y vacunas, pueden variar dependiendo el manejo y problemas de enfermedades, se estima un costo mensual de Q. 80.00 (100.00) por cada 500 gallinas.
12. Venta de gallinaza. La producción de gallinaza en un lote de 500 aves es de 80 sacos de 70 libras, los cuales pueden venderse en Q. 20.00 cada saco.
13. Gastos de capacitación y asistencia. Se estima necesario cubrir dos días de visitas mensuales que equivalen a Q. 250.00 incluyendo transporte.
14. Contador. Se estima que el gasto para el pago de un contador puede estar en Q.200.00, mensuales.
15. La mano de obra o salarios se calcula de la siguiente manera: 1) Cuando se paga un galerista hombre, este puede manejar hasta 3000 aves, el salario mensual puede estar entre Q. 600.00 y Q. 800.00. 2) Cuando las que atienden las galeras son mujeres, especialmente las participantes en el proyecto, la capacidad se reduce a Q. 1000 aves por persona, con un costo de Q. 20.00. Lo anterior se justifica por un lado en la variación de la fuerza corporal entre hombres y mujeres para el manejo de sacos de concentrado, traslado de huevos etc., por otro lado, la mayoría de mujeres que realizan trabajos en la granja, deben combinarlo con el cuidado de sus hijos.



16. La venta de los huevos la hacen las asociadas. Primero reciben cierta cantidad de huevos al costo establecido por la organización, el valor de la venta debe liquidarse cada quince días.
17. El costo de la construcción de una galera de 10 por 20 metros, con capacidad para 1,500 aves, se estima en Q. 23,000.00. **En costos actualizados se estima una galera de 10 por 15 metros con un costo de Q. 25,000.00.**



## BENEFICIOS DEL PROYECTO.

1. Se generan fuentes de trabajo, ya que a cada galerista se le paga Q. 20.00 por cada turno de trabajo.
2. Se generan ingresos adicionales en la venta de huevos, cuando las asociadas venden a precios superiores de los que deben liquidar en la organización.
3. El proyecto en general genera excedentes que podrán ser utilizados para el desarrollo de otros proyectos de beneficio económico familiar.
4. Se genera abono orgánico para uso en la agricultura familiar.
5. Se fomenta el espíritu empresarial comunitario ayuda al fortalecer la capacidad de gestión de la organización.
6. Es un proyecto auto sostenible.

## ASPECTOS FINANCIEROS.

- Se ha elaborado un cuadro de costos de un lote de 500 aves, el cual refleja los flujos que pueden generarse en un periodo de 16 meses. Con el manejo de 500 aves los flujos son bajos y no llegaría a ser un proyecto rentable y plenamente sostenible.

- Se ha analizado la posibilidad de iniciar con 500 aves incrementando 500 aves mas, en el mes 6, y luego 500 aves mas en el mes 18. Se elaboro un cuadro que muestra los flujos por cuatro años, los cuales indican que con un capital de Q. 68,900, en el cuarto año se llegara a un capital de Q. 124,200.00. Se establece que se tendrán utilidades acumuladas por Q. 77,200.00, lo que da una rentabilidad media del 41%, sobre la inversión inicial.
- Al analizar los indicadores financieros : Tasa interna de retorno TIR, Valor Actual Neto VAN y Beneficio Costo, podemos concluir en lo siguiente. El proyecto es recomendable para un plazo de 4 años, si se excluyen los costos de construcción de bodega y capital semilla (Q. 23,000.00 mas Q. 15,000.00). comparado con un costo de oportunidad del 12%. En la medida que estos costos se han incrementado, el proyecto deja de ser recomendable para 4 años, y se establece que alcanzara este nivel de eficiencia, a partir del quinto año. En general el proyecto se considera recomendable para este tipo de organizaciones, sin dejar por un lado que será conveniente mantener los niveles de asistencia técnica y capacitación en áreas técnico pecuarias y administración.
- Se analizo la posibilidad de incrementar la granja a 3000 aves en 4 años, lo que muestra ciertas ventajas, sin embargo se necesita buscar mayor financiamiento para la construcción nuevos gallineros y para el incremento de aves, lo cual debe ser analizado por cada organización en el futuro.

## CONCLUSIÓN.

El proyecto es recomendable para ser ejecutado por grupos comunitarios organizados con un aporte inicial para la construcción de un gallinero, compra de aves y alimento para cuatro semanas y manteniendo el apoyo en asistencia técnica y capacitación en las áreas técnico pecuarias, administración y mercadeo.

| No | Concepto   | 500 Aves         | 1,500 Aves       |
|----|--|------------------|------------------|
| 1  | Construcción de bodega<br>Antes: 23,000, hoy: 25,000 | 23,000.00        | 25,000.00        |
| 2  | Compra de aves (Antes Q.23 c/u ; hoy Q. 25 c/u       | 11,500           | 37,500.00        |
| 3  | Concentrado para un mes                              | 3,500.00         | 9,000.00         |
|    | <b>Total</b>   | <b>38,000.00</b> | <b>71,500.00</b> |

## CUADROS ADJUNTOS.

1. Cuadro de análisis de costos por lote de 500 aves, en un periodo normal de 16 meses.
2. Cuadro de flujo y proceso del incremento de 500 a 1500 aves en para un periodo de cuatro años.
3. Estados financieros proyectados a cuatro años. Resumen de aportes, Balance General, Estado de resultados y análisis de rentabilidad.
4. Cuadro de análisis de VAN, TIR Y B/C.
5. Graficas (Curva de postura, utilidades o excedentes por año, rentabilidad anual, aumento de activos).

## **Ejemplo de Estudio Mercadeo**

# INFORME DEL MERCADEO DE HUEVOS Y AVES PONEDORAS

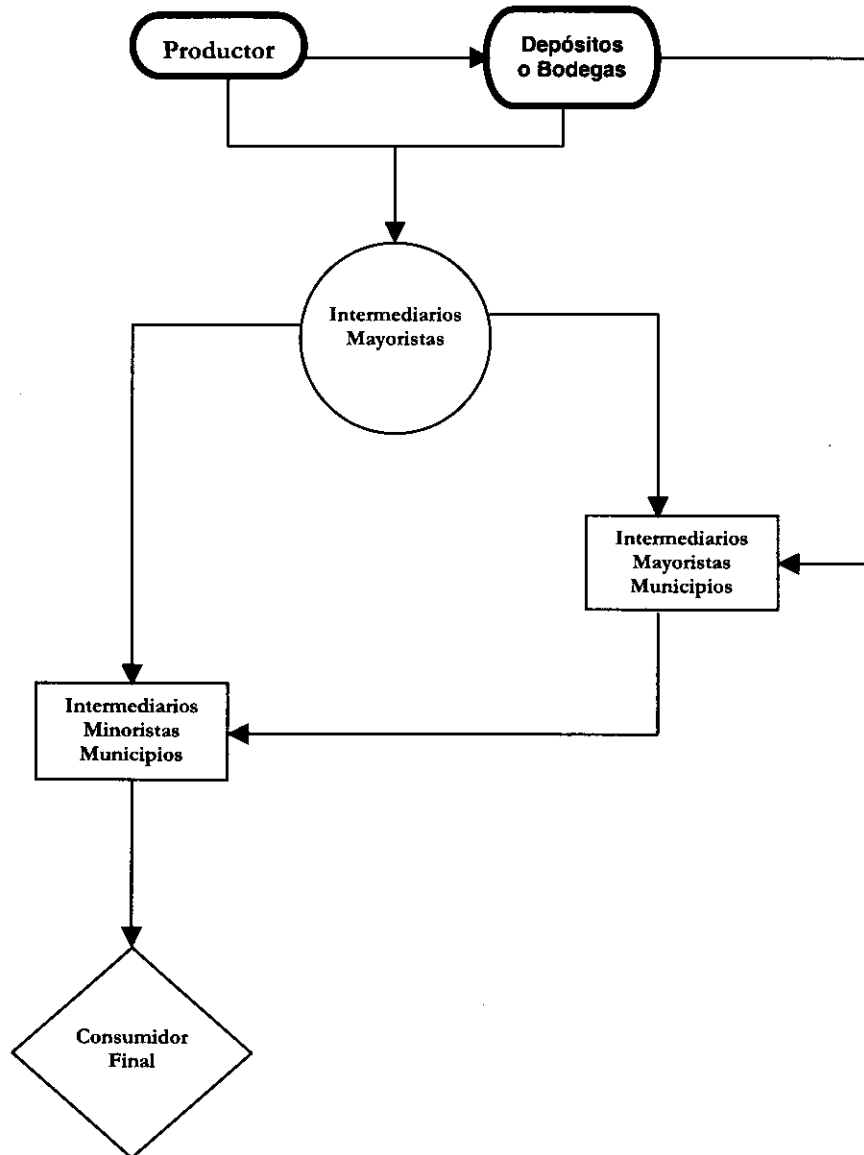
*Modelo de AGIL*

A) IDENTIFICACION DE LOS CANALES DE DISTRIBUCION NORMALES PARA LOS PRODUCTOS AGROPECUARIOS SELECCIONADOS.

| <b>DIAS DE PLAZA</b> |  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|
| <b>Municipios</b>    |  |  |  |  |  |  |
| <b>Días</b>          |  |  |  |  |  |  |

# ORGANIGRAMA

## CANALES DE DISTRIBUCIÓN NORMALES PARA LOS PRODUCTOS AGROPECUARIOS SELECCIONADOS



B) VALORES PROMEDIO POR PRODUCTO.

| <p align="center"><b>Huevos</b><br/> <b>Valores promedio</b><br/>                     Semana del ...<br/>                     (En Quetzales)</p> |         |  |  |  |  |                   |        |     |  |
|--|---------|--|--|--|--|-------------------|--------|-----|--|
| Municipios   |         |  |  |  |  | Municipio         |        |     |  |
| Unidad de Medida   | Tamaño  |  |  |  |  | Producto Nacional | México | USA |  |
| <b>Caja *</b>  | Grande  |  |  |  |  |                   |        |     |  |
|  | Mediano |  |  |  |  |                   |        |     |  |
|  | Pequeño |  |  |  |  |                   |        |     |  |

\* Caja de 12 cartones, (cartones de 30 unidades).

| <p align="center"><b>POLLO</b><br/> <b>Valores promedio</b><br/>                     Semana del ...<br/>                     (En Quetzales)</p> |  |  |  |  |  |                |              |  |
|---|--|--|--|--|--|----------------|--------------|--|
| Municipios  |  |  |  |  |  | Municipio      |              |  |
| Unidad de Medida  |  |  |  |  |  | Pollo Nacional | Pollo de USA |  |
| <b>Quintal</b>  |  |  |  |  |  |                |              |  |
| (En Pié)  |  |  |  |  |  |                |              |  |
| <b>Caja</b>   |  |  |  |  |  |                |              |  |
| (En Canal)  |  |  |  |  |  |                |              |  |
| <b>Arroba</b>   |  |  |  |  |  |                |              |  |

**GALLINAZA:**

Precio máximo de compra: Q el quintal.

Precio mínimo de compra: Q el quintal.

C) VOLUMEN PROMEDIO POR PRODUCTO.

| <b>HUEVOS</b>                         |   |  |                      |  |                                 |
|---------------------------------------|---|--|----------------------|--|---------------------------------|
| <b>VOLÚMENES DEMANDADOS Y VALORES</b> |   |  |                      |  |                                 |
| <b>Municipios</b>                     | <b>Volúmenes promedio demandados por semana</b> | <b>Precios promedio de compra por caja</b> | <b>Total Semanal</b> | <b>Volúmenes promedio mensual demandados</b> | <b>Valores promedio Mensual</b> |
|                                       | (En Cajas) *                                    | (En Quetzales)                             | (En Quetzales)       | (En Cajas) *                                 | (En Quetzales)                  |
|                                       |   |  |                      |  |                                 |
|                                       |   |  |                      |  |                                 |
|                                       |   |  |                      |  |                                 |
|                                       |   |  |                      |  |                                 |
|                                       |   |  |                      |  |                                 |
|                                       |   |  |                      |  |                                 |
|                                       |   |  |                      |  |                                 |

\* Caja de 12 cartones, (cartones de 30 unidades).

| <b>POLLO</b>                          |   |   |                      |  |                                 |
|---------------------------------------|---|---|----------------------|--|---------------------------------|
| <b>VOLÚMENES DEMANDADOS Y VALORES</b> |   |   |                      |  |                                 |
| <b>Municipios</b>                     | <b>Volúmenes promedio demandados por semana</b> | <b>Precios promedio de compra por quintal</b> | <b>Total Semanal</b> | <b>Volúmenes promedio mensual demandados</b> | <b>Valores promedio Mensual</b> |
|                                       | (En Quintales)                                  | (En Quetzales)                                | (En Quetzales)       | (En Quintales)                               | (En Quetzales)                  |
|                                       |   |   |                      |  |                                 |
|                                       |   |   |                      |  |                                 |
|                                       |   |   |                      |  |                                 |
|                                       |   |   |                      |  |                                 |
|                                       |   |   |                      |  |                                 |
|                                       |   |   |                      |  |                                 |
|                                       |   |   |                      |  |                                 |

\* Solamente se encontró una tienda, que vende esta cantidad de pollo aproximadamente a la semana. Lo volúmenes mayores se comercializan los días de plaza.

**GALLINAZA:**

D) COSTOS PROMEDIO POR AREA.

E) COMPORTAMIENTO DEL MERCADO EN GENERAL PARA CADA UNO CON FLUCTUACIÓN DE PRECIOS ANUAL.

**HUEVOS:**

| <b>Municipio</b>                     |                         |                |              |            |           |          |          |          |          |          |           |          |           |           |           |
|--------------------------------------|-------------------------|----------------|--------------|------------|-----------|----------|----------|----------|----------|----------|-----------|----------|-----------|-----------|-----------|
| <b>VALORES PROMEDIO</b>              |                         |                |              |            |           |          |          |          |          |          |           |          |           |           |           |
| <b>(En Quetzales)</b>                |                         |                |              |            |           |          |          |          |          |          |           |          |           |           |           |
| <b>Precios promedio según tamaño</b> | <b>Unidad de Medida</b> | <b>Tamaño</b>  | <b>Meses</b> | <i>E</i>   | <i>F</i>  | <i>M</i> | <i>A</i> | <i>M</i> | <i>J</i> | <i>J</i> | <i>A</i>  | <i>S</i> | <i>O</i>  | <i>N</i>  | <i>D</i>  |
|                                      |                         |                |              | <i>N</i>   | <i>E</i>  | <i>A</i> | <i>B</i> | <i>A</i> | <i>U</i> | <i>U</i> | <i>G</i>  | <i>E</i> | <i>C</i>  | <i>O</i>  | <i>I</i>  |
|                                      | <i>R</i>                | <i>B</i>       | <i>R</i>     | <i>R</i>   | <i>Y</i>  | <i>N</i> | <i>L</i> | <i>O</i> | <i>P</i> | <i>T</i> | <i>V</i>  | <i>C</i> |           |           |           |
|                                      |                         |                |              | <i>O</i>   | <i>E.</i> | <i>O</i> | <i>L</i> | <i>O</i> | <i>O</i> | <i>O</i> | <i>T.</i> | <i>L</i> | <i>B.</i> | <i>E.</i> | <i>E.</i> |
|                                      |                         |                |              | <b>AÑO</b> |           |          |          |          |          |          |           |          |           |           |           |
|                                      |                         |                |              | <b>AÑO</b> |           |          |          |          |          |          |           |          |           |           |           |
|                                      | <b>Caja *</b>           | <b>Grande</b>  |              |            |           |          |          |          |          |          |           |          |           |           |           |
|                                      |                         | <b>Mediano</b> |              |            |           |          |          |          |          |          |           |          |           |           |           |
|                                      |                         | <b>Pequeño</b> |              |            |           |          |          |          |          |          |           |          |           |           |           |

\* Caja de 12 cartones, (cartones de 30 unidades).



*HUEVOS*

**FLUCTUACIÓN DE PRECIOS DE VENTA, SEGÚN MUNICIPIO**

| Lugar de Venta | Unidad de Medida | Tamaño  | Precios Máximos Promedio de Venta | Precios Mínimos Promedio de Venta | Volúmenes Globales estimados por semana, observados | Volúmenes Globales estimados por semana, observados |
|----------------|------------------|---------|-----------------------------------|-----------------------------------|---|---|
|                |                  |         | (En Quetzales)                    | (En Quetzales)                    | (En Cajas)  | (En Unidades)                                       |
|                | Unidad           | Grande  |                                   |                                   |   |   |
|                |                  | Mediano |                                   |                                   |   |   |
|                |                  | Pequeño |                                   |                                   |   |   |
|                | Unidad           | Grande  |                                   |                                   |   |   |
|                |                  | Mediano |                                   |                                   |   |   |
|                |                  | Pequeño |                                   |                                   |   |   |
|                | Unidad           | Grande  |                                   |                                   |   |   |
|                |                  | Mediano |                                   |                                   |   |   |
|                |                  | Pequeño |                                   |                                   |   |   |
|                | Unidad           | Grande  |                                   |                                   |   |   |
|                |                  | Mediano |                                   |                                   |   |   |
|                |                  | Pequeño |                                   |                                   |   |   |
|                | Unidad           | Grande  |                                   |                                   |   |   |
|                |                  | Mediano |                                   |                                   |   |   |
|                |                  | Pequeño |                                   |                                   |   |   |
|                | Unidad           | Grande  |                                   |                                   |   |   |
|                |                  | Mediano |                                   |                                   |   |   |
|                |                  | Pequeño |                                   |                                   |   |   |
| <b>TOTALES</b> |                  |         |                                   |                                   |   |   |

**POLLO:**

| <b>Municipio</b>                           |                  |            |                       |                       |                       |                       |                  |                       |                       |                            |                            |                            |                       |                       |  |
|--|------------------|------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------|-----------------------|-----------------------|----------------------------|----------------------------|----------------------------|-----------------------|-----------------------|--|
| <b>VALORES PROMEDIO</b>                    |                  |            |                       |                       |                       |                       |                  |                       |                       |                            |                            |                            |                       |                       |  |
| <b>(En Quetzales)</b>                      |                  |            |                       |                       |                       |                       |                  |                       |                       |                            |                            |                            |                       |                       |  |
| <b>Precios promedio según presentación</b> | Unidad de Medida | Meses      | E<br>N<br>E<br>R<br>O | F<br>E<br>B<br>R<br>E | M<br>A<br>R<br>Z<br>O | A<br>B<br>R<br>I<br>L | M<br>A<br>Y<br>O | J<br>U<br>N<br>I<br>O | J<br>U<br>L<br>I<br>O | A<br>G<br>O<br>S<br>T<br>O | S<br>E<br>P<br>T<br>I<br>E | O<br>C<br>T<br>U<br>B<br>R | N<br>O<br>V<br>I<br>E | D<br>I<br>C<br>I<br>E |  |
|  | Quintal          | (En Pie)   |                       |                       |                       |                       |                  |                       |                       |                            |                            |                            |                       |                       |  |
|  | Caja             | (En Canal) |                       |                       |                       |                       |                  |                       |                       |                            |                            |                            |                       |                       |  |
|  | Arroba           |            |                       |                       |                       |                       |                  |                       |                       |                            |                            |                            |                       |                       |  |

| <b>POLLO</b>  |                  |   |   |   |  |
|---|------------------|---|---|---|--|
| <b>FLUCTUACIÓN DE PRECIOS DE VENTA, SEGÚN MUNICIPIO</b> |                  |   |   |   |  |
| Lugar de Venta  | Unidad de Medida | Precios Máximos Promedio de Venta<br>(En Quetzales) | Precios Mínimos Promedio de Venta<br>(En Quetzales) | Volúmenes Globales estimados por semana, observados<br>(En Quintales) | Volúmenes Globales estimados por semana, observados<br>(En Libras) |
|   | Libra            |   |   |   |  |
|   | Libra            |   |   |   |  |
|   | Libra            |   |   |   |  |
|   | Libra            |   |   |   |  |
|   | Libra            |   |   |   |  |
|   | Libra            |   |   |   |  |
| <b>TOTALES</b>  |                  |   |   |   |  |

**GALLINAZA:**

Precio máximo de venta: Q el quintal

Precio mínimo de venta: Q el quintal

**F) IDENTIFICACIÓN DE OFERTA O COMPETENCIA EN CADA PRODUCTO.**

**HUEVOS:**

| <b>OFERENTES</b>   |  |  |  |  |  |  |
|--------------------|--|--|--|--|--|--|
| <b>Municipios</b>  |  |  |  |  |  |  |
| <b>Procedencia</b> |  |  |  |  |  |  |

**POLLO:**

| <b>OFERENTES</b>   |  |  |  |  |  |  |
|--------------------|--|--|--|--|--|--|
| <b>Municipios</b>  |  |  |  |  |  |  |
| <b>Procedencia</b> |  |  |  |  |  |  |

**GALLINAZA:**

G) ASISTENCIA TÉCNICA APROPIADA PARA LOGRAR UNA EXCELENTE PRODUCCION.

H) IDENTIFICACIÓN DE DEMANDA Y CONTACTOS EN CADA LUGAR.

**HUEVOS:**

| <b>HUEVOS</b> | <b>Municipio</b> | <b>No.</b> | <b>Nombre Persona Encargada</b> | <b>Dirección</b> | <b>Observaciones</b> |
|---------------|------------------|------------|---------------------------------|------------------|----------------------|
|               |                  | 1          |                                 |                  |                      |
|               |                  | 2          |                                 |                  |                      |
|               |                  | 3          |                                 |                  |                      |
|               |                  | 4          |                                 |                  |                      |
|               |                  | 5          |                                 |                  |                      |
|               |                  | 6          |                                 |                  |                      |
|               |                  | 7          |                                 |                  |                      |
|               |                  | 8          |                                 |                  |                      |
|               |                  | 9          |                                 |                  |                      |
|               |                  | 10         |                                 |                  |                      |

**POLLO:**

| <b>Pollo</b> | <b>Municipio</b> | <b>No.</b> | <b>Nombre Persona Encargada</b> | <b>Dirección</b> | <b>Observaciones</b> |
|--------------|------------------|------------|---------------------------------|------------------|----------------------|
|              |                  | 1          |                                 |                  |                      |
|              |                  | 2          |                                 |                  |                      |
|              |                  | 3          |                                 |                  |                      |
|              |                  | 4          |                                 |                  |                      |
|              |                  | 5          |                                 |                  |                      |
|              |                  | 6          |                                 |                  |                      |
|              |                  | 7          |                                 |                  |                      |
|              |                  | 8          |                                 |                  |                      |
|              |                  | 9          |                                 |                  |                      |
|              |                  | 10         |                                 |                  |                      |

**GALLINAZA:**

| <b>Gallinaza</b> | <b>Municipio</b> | <b>No.</b> | <b>Nombre Persona Encargada</b> | <b>Dirección</b> | <b>Observaciones</b> |
|------------------|------------------|------------|---------------------------------|------------------|----------------------|
|                  |                  | 1          |                                 |                  |                      |
|                  |                  | 2          |                                 |                  |                      |
|                  |                  | 3          |                                 |                  |                      |
|                  |                  | 4          |                                 |                  |                      |
|                  |                  | 5          |                                 |                  |                      |
|                  |                  | 6          |                                 |                  |                      |
|                  |                  | 7          |                                 |                  |                      |
|                  |                  | 8          |                                 |                  |                      |
|                  |                  | 9          |                                 |                  |                      |
|                  |                  | 10         |                                 |                  |                      |

I) ESTABLECER, EN LA MEDIDA DE LO POSIBLE, CITAS CON LOS COMPRADORES PARA PODER FORMALIZAR COMPROMISOS DE COMPRA Y VER TERMINOS DE COMPRA, CALIDADES Y FORMA DE PAGO.

J) CALENDARIZAR EL INICIO DE LA ENTREGA DE LOS PRODUCTOS.

K) ESTABLECER CONTACTOS CON TRANSPORTISTAS CONFIABLES PARA LA TEMPORADA.

**Municipio**

**Camión:**

**Pick Up:**

**CONCLUSIONES:**

Del estudio de mercadeo de huevos y aves ponedoras en (incluye área) y otras áreas selectas, se infiere lo siguiente:

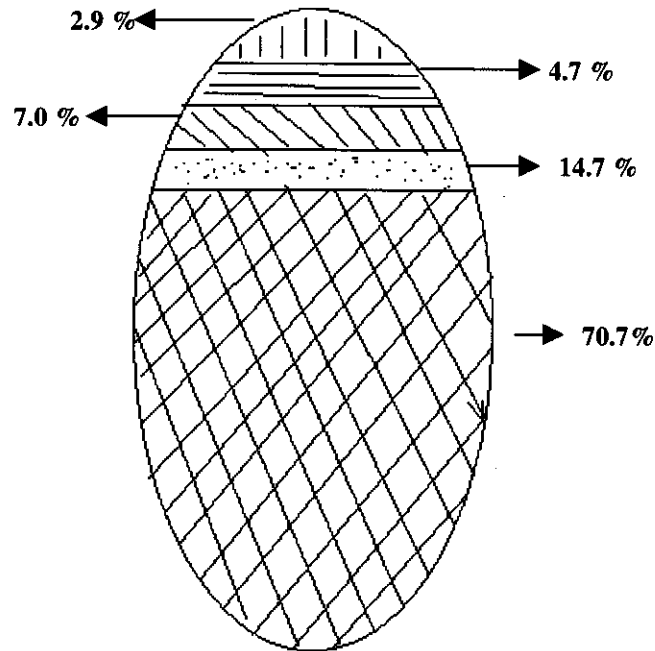
**RECOMENDACIONES:**

## Anexo

### MARGENES DE GANANCIA

|                | Cantidad | Unidad de Medida | Costo Unidad   | Costo Total    | Precio de Venta Unidad | Margen de Comercialización |          | Venta Total    | Ganancia       |
|----------------|----------|------------------|----------------|----------------|------------------------|----------------------------|----------|----------------|----------------|
|                |          |                  | (En Quetzales) | (En Quetzales) | (En Quetzales)         | Absoluto                   | Relativo | (En Quetzales) | (En Quetzales) |
|                | 15,000   | Unidad           | 0.35           | 5,250.00       | 0.52                   | 0.17                       | 48.57%   | 7,800.00       | 2,550.00       |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
|                |          | Unidad           |                |                |                        |                            |          |                |                |
| <b>TOTALES</b> | 15,000   |                  |                | 5,250.00       |                        |                            |          | 7,800.00       | 2,550.00       |





**Costo Unidad = Q 0.35:**

|                |                |          |                |
|----------------|----------------|----------|----------------|
| Alimentos:     | Q 0.247        | =        | 70.7%          |
| Valor del ave: | Q 0.051        | =        | 14.7%          |
| Local granja:  | Q 0.024        | =        | 7.0%           |
| Renta bodega:  | Q 0.016        | =        | 4.7%           |
| Transporte:    | <u>Q 0.01</u>  | =        | <u>2.9%</u>    |
| <b>TOTALES</b> | <b>Q 0.348</b> | <b>=</b> | <b>100.00%</b> |

A G I L

PLANOS DE OBRA CIVIL

Galera para 1500 Gallinas Ponedoras

TIPO 1

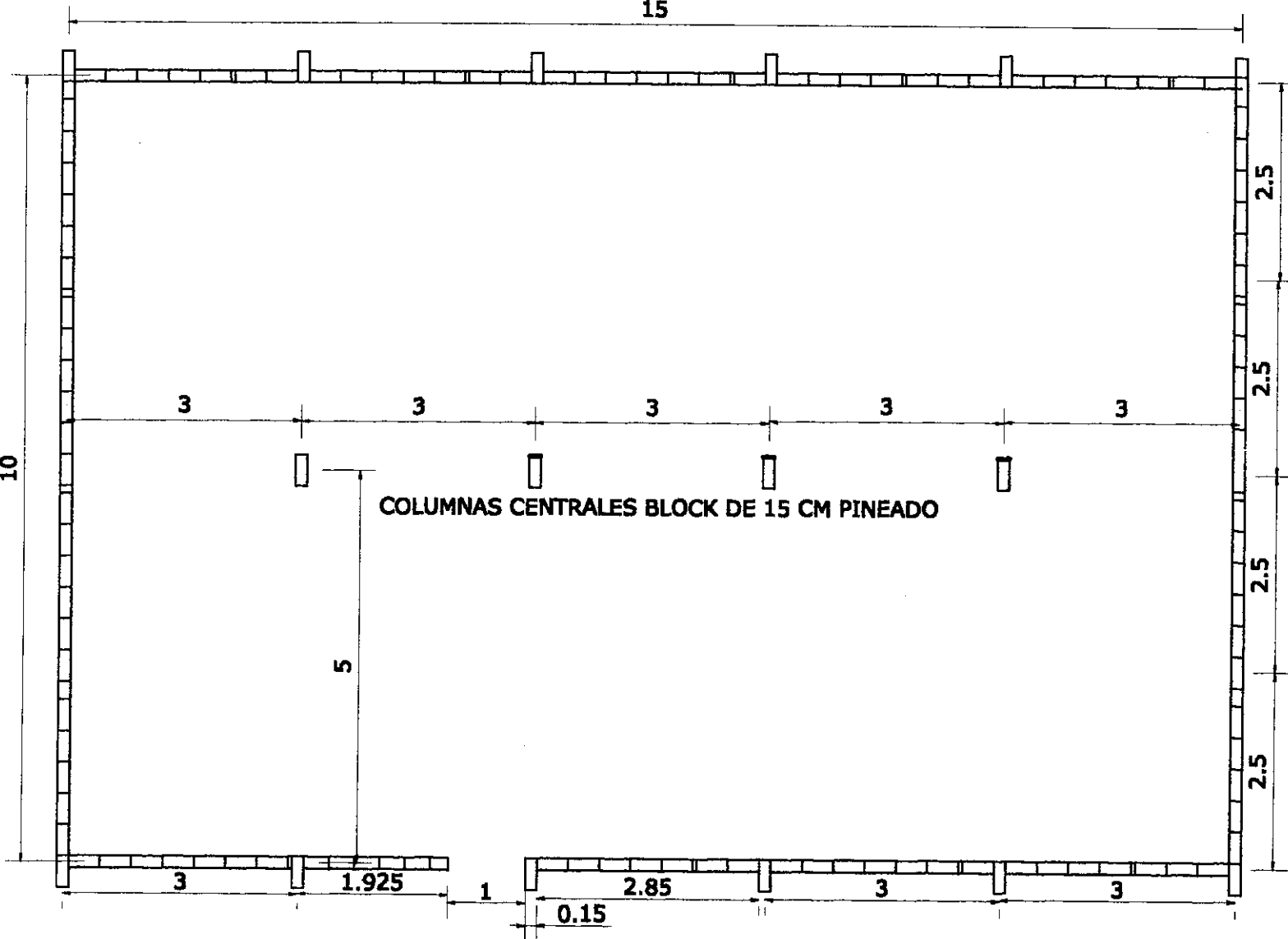
## CONTENIDO

1. PLANO DE PLANTA DE PAREDES
2. PLANO DE VISTA FRONTAL
3. PLANO DE ESTRUCTURA Y ENLAMINADO
4. PLANO DE LOCALIZACIÓN DEL HOSPITAL
5. PLANO DE DETALLES DE REFUERZO DE PAREDES Y COLUMNAS
6. PLANO DE DETALLES DE REFUERZO DE COLUMNAS CIMIENTOS Y SOLERA
7. PLANO DE DETALLES DE REFUERZO DE COLUMNA CENTRAL
8. PLANO DE DETALLES DE SOLERA DE REMATE
9. PRESUPUESTO

CENTRO A CENTRO DE PARED DE BLOCK

15

CENTRO A CENTRO DE PARED DE BLOCK  
10

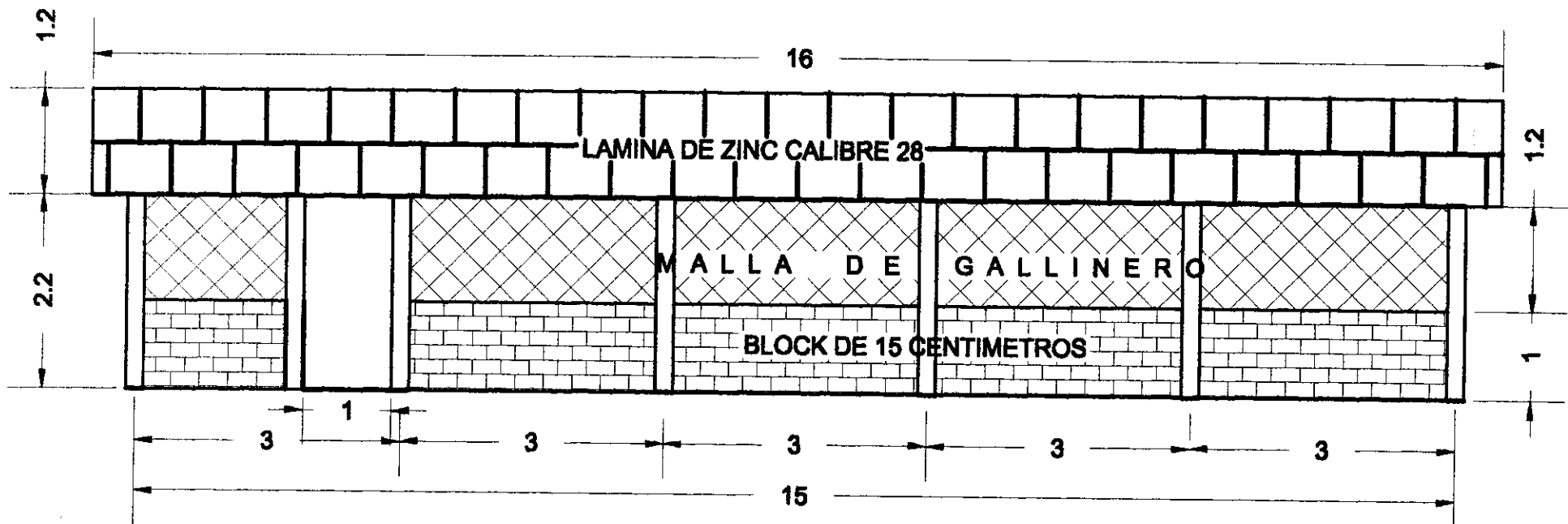


COLUMNAS CENTRALES BLOCK DE 15 CM PINEADO

PLANTA

PLANTA DE PAREDES  
GALLINERO TIPICO (tipo 1)  
PARA 1500 GALLINAS  
Sin escala mayo de 2003

AGIL  
GALLINERO TIPICO  
PARA 1500 GALLINA  
Sin escala mayo de 1003



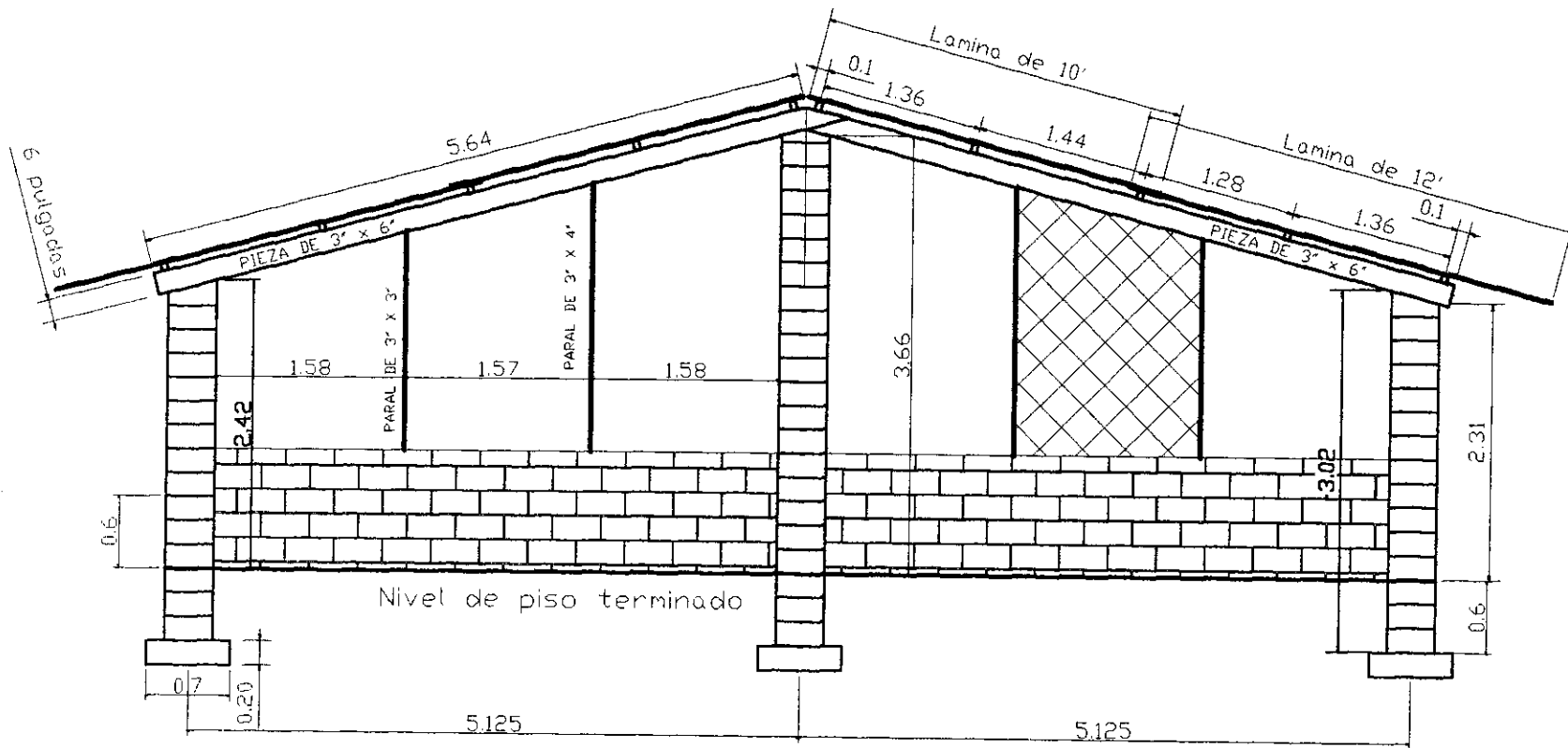
VISTA FRONTAL

AGIL

PROYECTO: GALLINERO TÍPICO (1)  
PLANO DE ESTRUCTURA  
Y ENLAMINADO

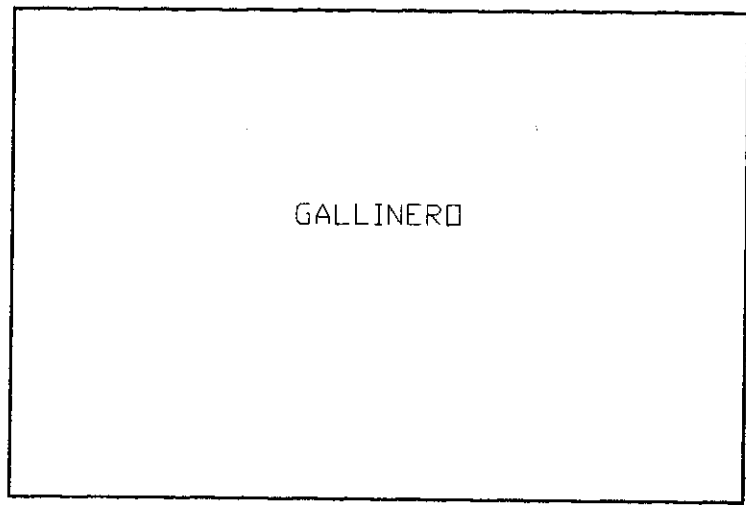
Sin escala mayo de 2003

TIPO ESPECIAL PARA LUGARES FRIOS

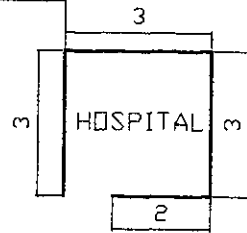


VISTA LATERAL

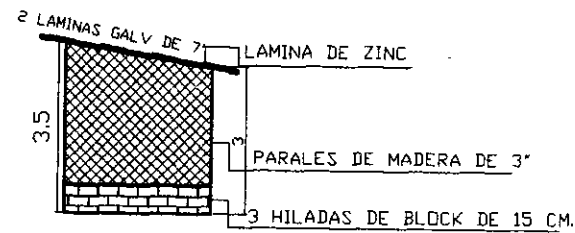
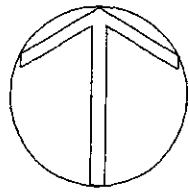
AGIL  
PROYECTO: GALLINERO TIPO 1  
LOCALIZACION DEL HOSPITAL  
Sin escala mayo de 2003



10 METROS DISTANCIA MINIMA



DIRECCION DEL VIENTO



DETALLE DE HOSPITAL

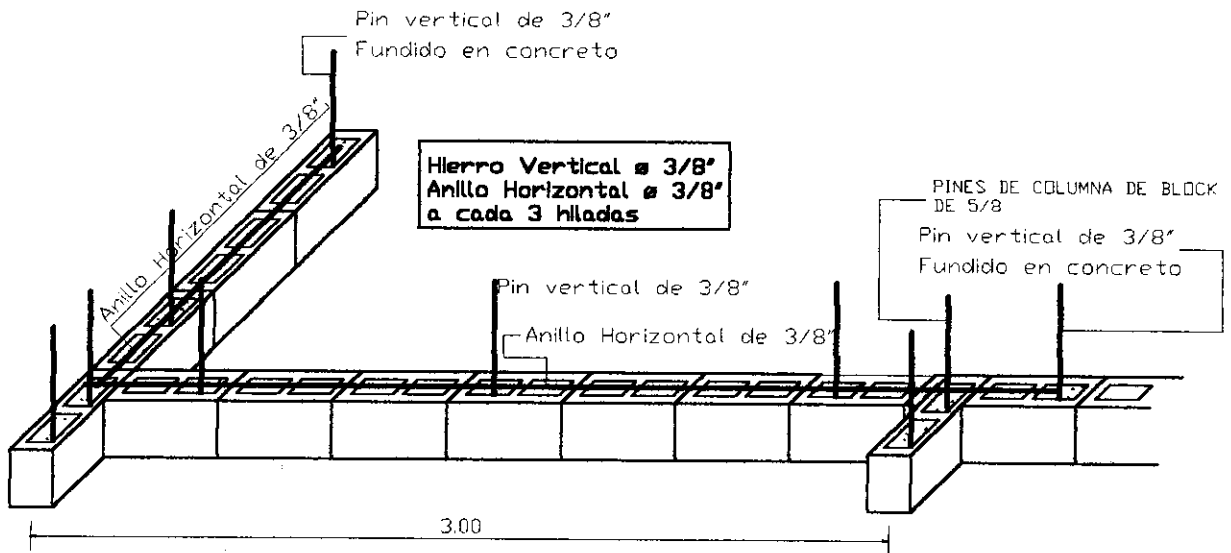
**A G I L**

**PROYECTO: GALLINERO TIPO 1  
PLANO DE DETALLE DE REFUERZO  
DE PAREDES Y COLUMNAS**

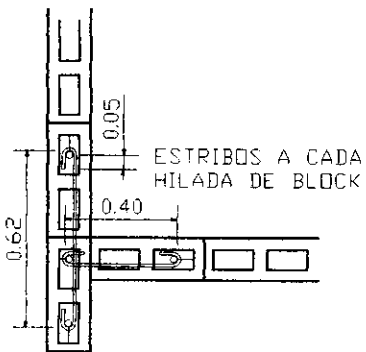
Sin escala

mayo de 2003

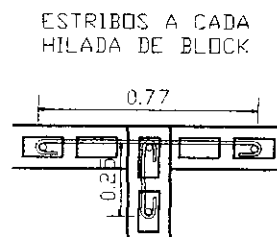
**NOTA IMPORTANTE  
EL ENCADENADO DEL BLOCK  
Y LOS AJUSTES NECESARIOS SE  
EFECTUARAN EN LA OBRA**



**DETALLE DE REFUERZO EN PAREDES Y COLUMNAS  
TRAMO DE 3.00 METROS CENTRO A CENTRO**



**DETALLE DE REFUERZO  
COLUMNA DE ESQUINA**



**DETALLE DE REFUERZO  
COLUMNA INTERMEDIA**

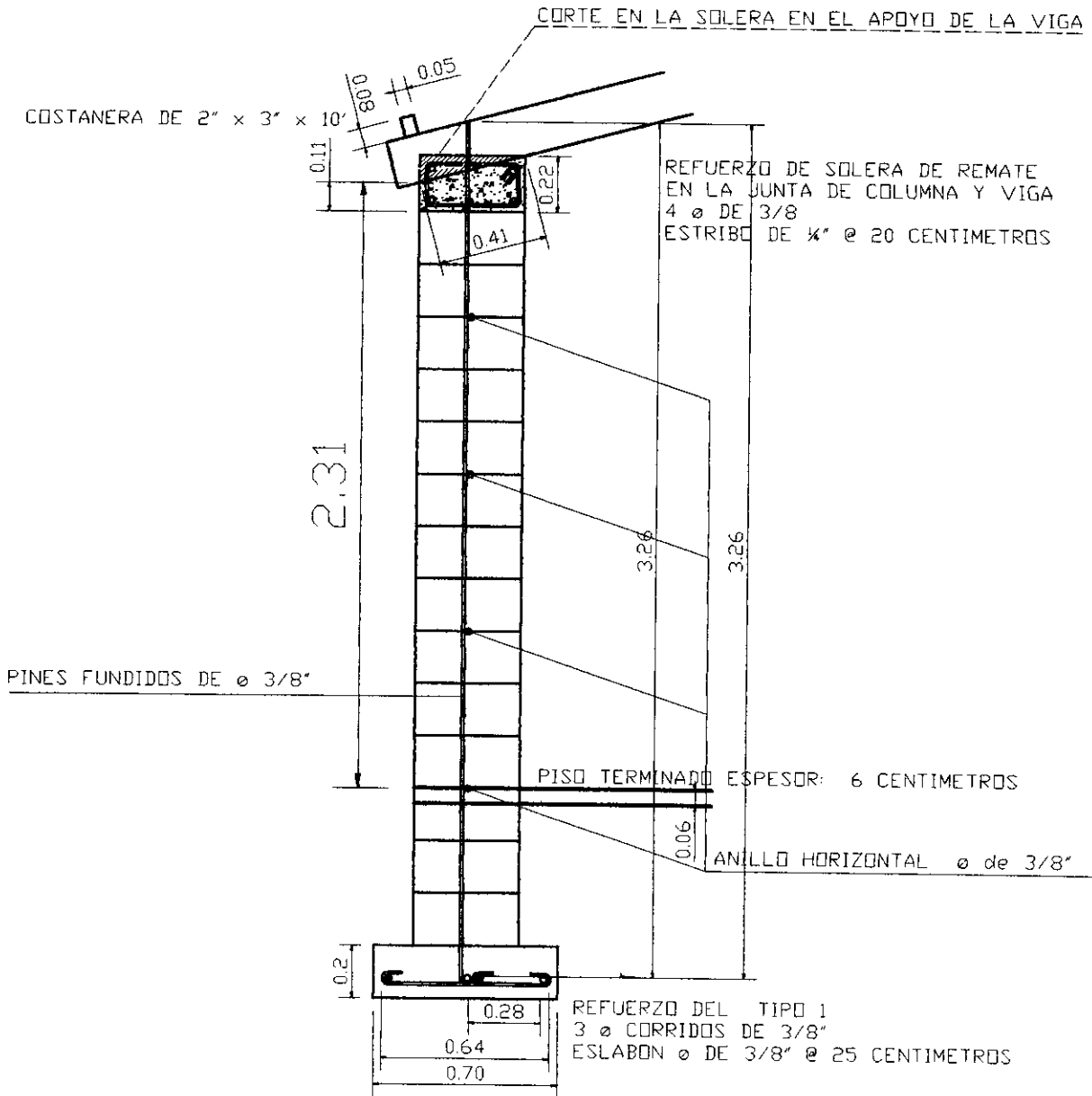


# AGIL

## GALLINERO TIPICO

### PLANO DE DETALLE DE REFUERZO DE COLUMNAS CIMENTOS Y SOLERA Sin escala

mayo 03

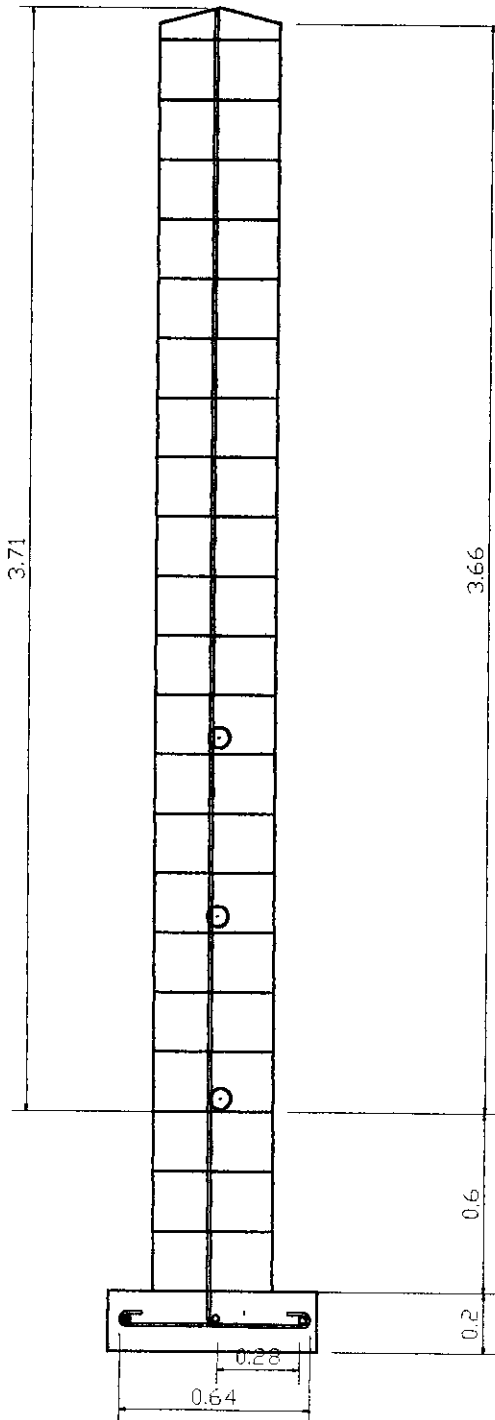


**A G I L**

**GALLINERO TIPICO  
PLANO DE DETALLE DE REFUERZO  
COLUMNA CENTRAL**

**Sin escala**

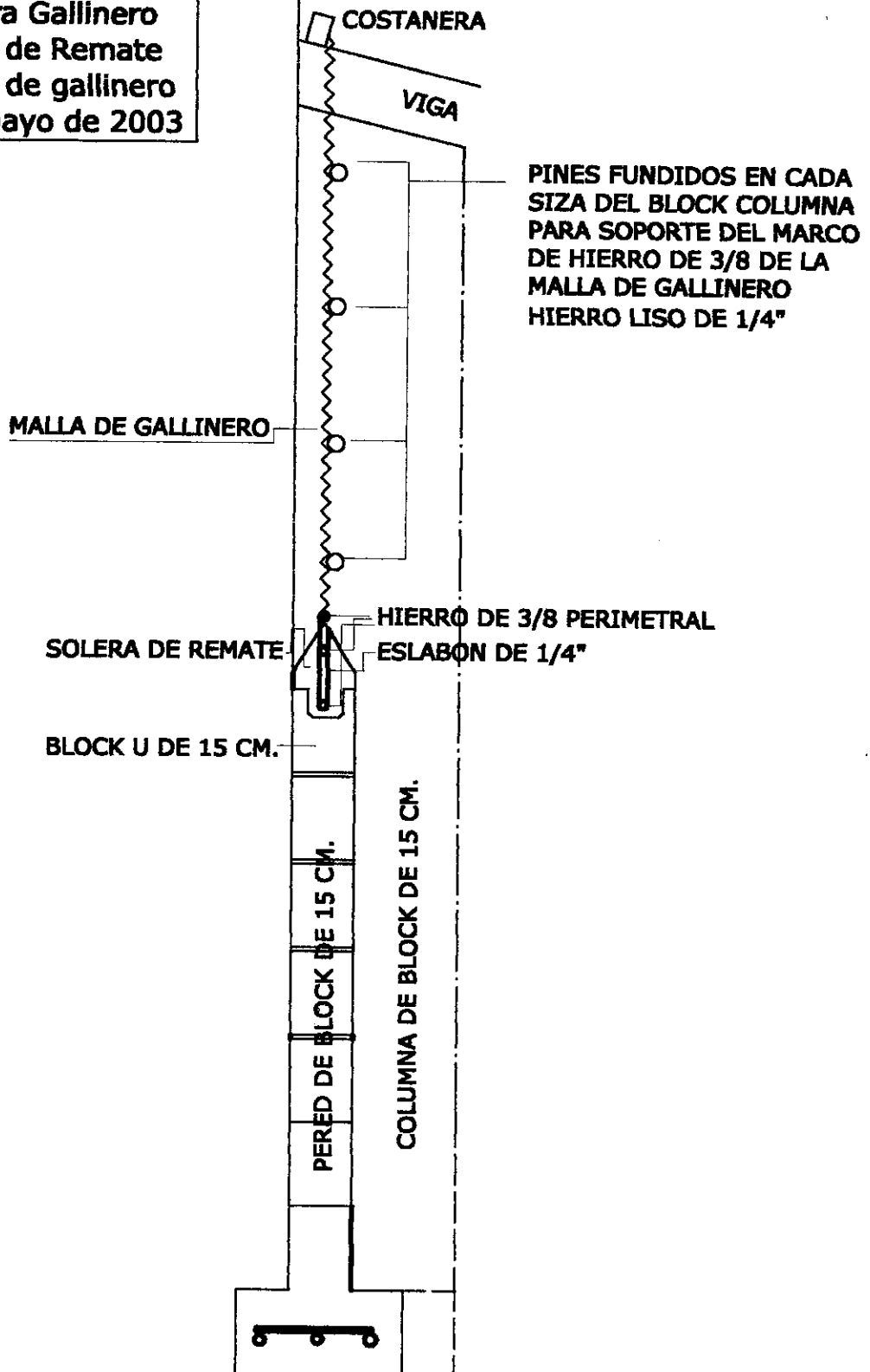
**mayo 03**



REFUERZO DEL CIMENTO  
3  $\circ$  CORRIDOS DE 3/8"  
ESLABON  $\circ$  DE 3/8" @ 25 CENTIMETROS

A G I L

Galera Típica Para Gallinero  
Detalle de solera de Remate  
Soportes de Malla de gallinero  
Sin escala mayo de 2003



| AGIL                      |  |         |          |             |       |                    |
|---------------------------|--|---------|----------|-------------|-------|--------------------|
| GALERA PARA 1500 GALLINAS |  |         |          |             |       |                    |
| MATERIALES                |  |         |          |             |       |                    |
| Nº                        | Renglon                                  | Unidad  | Cantidad | P. Unitario | Total |                    |
| 1                         | Concreto Mortero y mezclon               |         |          |             |       |                    |
| 1.1                       | Arena de Rio                             | M3      | 10       | Q 70.00     | Q     | 700.00             |
| 1.2                       | Piedrin                                  | M3      | 6        | Q 120.00    | Q     | 720.00             |
| 1.4                       | Cemento                                  | Sacos   | 70       | Q 40.00     | Q     | 2,800.00           |
| 2                         | Cal                                      | Bolsas  | 42       | Q 20.00     | Q     | 840.00             |
| 1                         | Acero de Refuerzo                        |         |          |             | Q     | -                  |
| 2.1                       | Acero corrugado de 3/8                   | Quintal | 6        | Q 130.00    | Q     | 780.00             |
| 2.2                       | Acero liso de 1/4                        | Quintal | 2        | Q 130.00    | Q     | 260.00             |
| 2.3                       | Alambre de amarre                        | Libras  | 40       | Q 2.50      | Q     | 100.00             |
| 3                         |  |         |          |             | Q     | -                  |
| 3.1                       | Paredes de Block de 15 Cm.               | Unidad  | 1350     | Q 2.50      | Q     | 3,375.00           |
| 4                         | Estructura del techo                     |         |          |             | Q     | -                  |
| 4.1                       | Madera                                   |         |          |             | Q     | -                  |
| 4.1.1                     | Piezas de 3" x 6" x 20'                  | Unidad  | 12       | Q 75.00     | Q     | 900.00             |
| 4.1.2                     | Piezas de 2" x 3" x 10'                  | Unidad  | 30       | Q 12.50     | Q     | 375.00             |
| 4.1.3                     | Piezas de 2" x 3" x 12'                  | Unidad  | 20       | Q 15.00     | Q     | 300.00             |
| 4.1.4                     | Tornillos de 1/2" x 5"                   | Unidad  | 12       | Q 8.00      | Q     | 96.00              |
| 4.1.5                     | Clavo de 4"                              | Libras  | 50       | Q 2.50      | Q     | 125.00             |
| 4.1.6                     | Clavo de 3"                              | Libras  | 15       | Q 2.50      | Q     | 37.50              |
| 4.2                       | Lamina de cubierta                       |         |          |             | Q     | -                  |
| 4.2.1                     | Lamina Galvanizada Cal 28 de 10'         | Unidad  | 46       | Q 44.00     | Q     | 2,024.00           |
| 4.2.2                     | Lamina Galvanizada Cal 28 de 12'         | Unidad  | 46       | Q 53.00     | Q     | 2,438.00           |
| 4.2.3                     | Capotes de lamina Galv. de 6'            | Unidad  | 10       | Q 14.00     | Q     | 140.00             |
| 4.2.4                     | Clavo de Lamina                          | Libras  | 10       | Q 2.50      | Q     | 25.00              |
| 5                         | Ponederos (Tabla de 10')                 | Unidad  | 42       | Q 25.00     | Q     | 1,050.00           |
| 6                         | Malla de gallinero (Rollo de 25 Mts)     | Rollo   | 2.5      | Q 300.00    | Q     | 750.00             |
| 7                         | Tubos PVC de 1/2"                        | Unidad  | 15       | Q 15.00     | Q     | 225.00             |
| 8                         | Tubos PVC de 3/4"                        | Unidad  | 7        | Q 20.00     | Q     | 140.00             |
| 9                         | Accesorios                               | Global  |          |             | Q     | 150.00             |
| 10                        | Transporte                               |         |          |             | Q     | 900.00             |
| 11                        | Bebedores y Comederos                    |         |          |             | Q     | 2,500.00           |
|                           | <b>Total Materiales</b>                  |         |          |             |       | <b>Q 21,750.50</b> |
| 12                        | Mano de Obra calificada                  |         |          |             |       |                    |
|                           | 2 Albañiles 30 dias                      |         |          |             | Q     | 3,000.00           |
|                           | <b>TOTAL (Materiales + Mano de obra)</b> |         |          |             |       | <b>Q 24,750.50</b> |
|                           | <b>NO INCLUYE MOVIMIENTO DE TIERRAS</b>  |         |          |             |       |                    |

May-03

A G I L

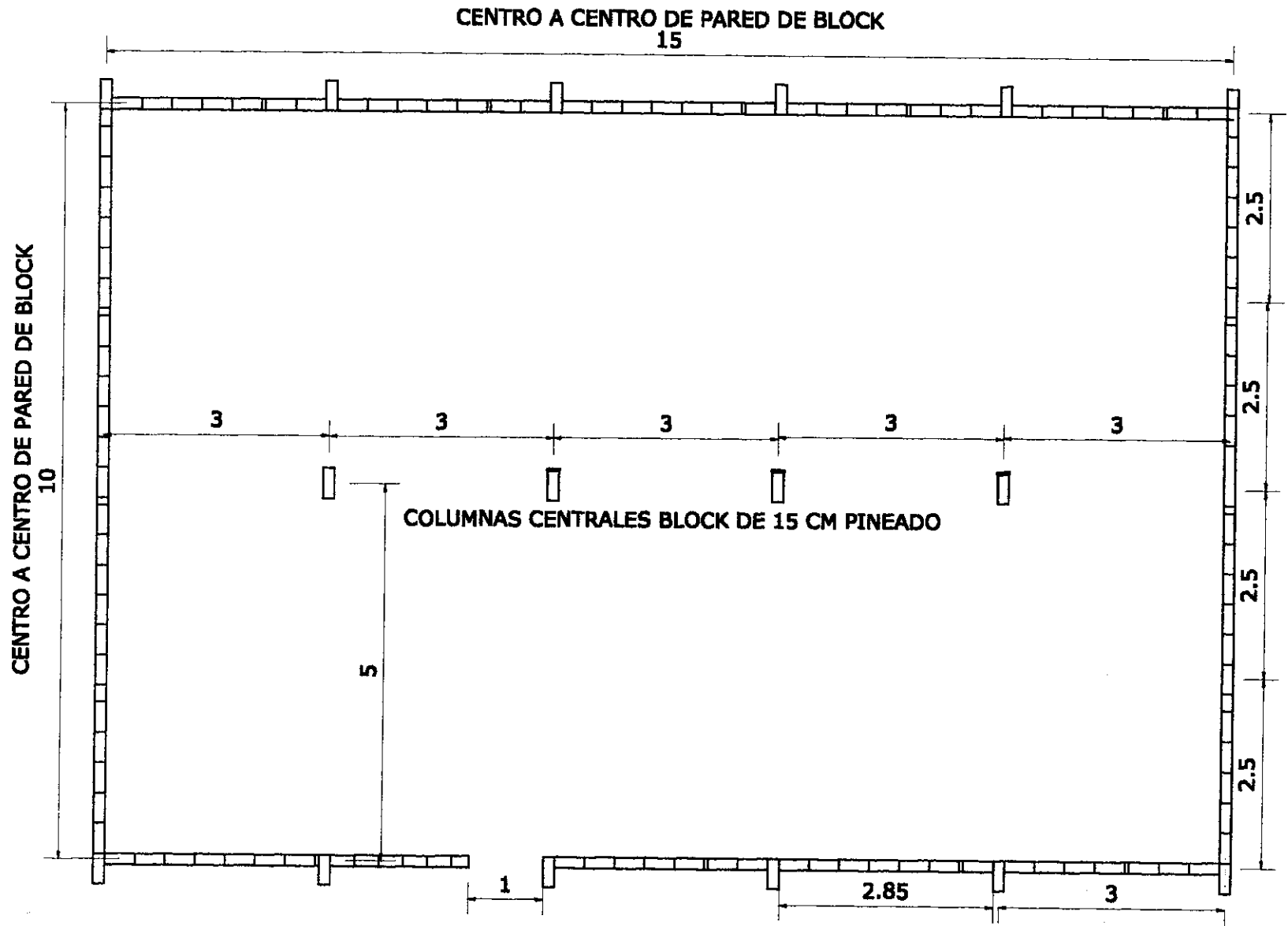
PLANOS DE OBRA CIVIL

Galera para 1500 Gallinas Ponedoras

TIPO 2

## CONTENIDO

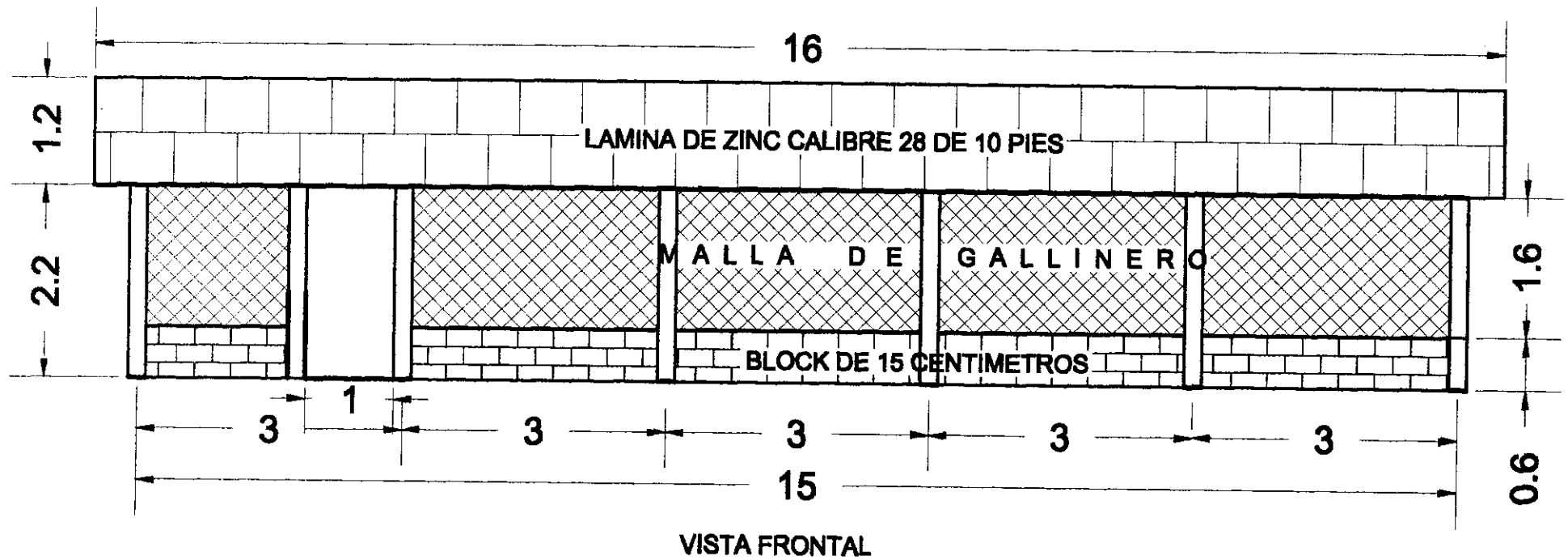
1. PLANO DE PLANTA DE PAREDES
2. PLANO DE VISTA FRONTAL
3. PLANO DE ESTRUCTURA Y ENLAMINADO
4. PLANO DE LOCALIZACIÓN DEL HOSPITAL
5. PLANO DE DETALLES DE REFUERZO DE PAREDES Y COLUMNAS
6. PLANO DE DETALLES DE REFUERZO DE COLUMNAS CIMIENTOS Y SOLERA
7. PLANO DE DETALLES DE REFUERZO DE COLUMNA CENTRAL
8. PLANO DE DETALLES DE SOLERA DE REMATE
9. PRESUPUESTO



**PLANTA DE PAREDES  
GALLINERO TIPICO (tipo 2)  
PARA 1500 GALLINAS  
Sin escala mayo de 2003**

**PLANTA**

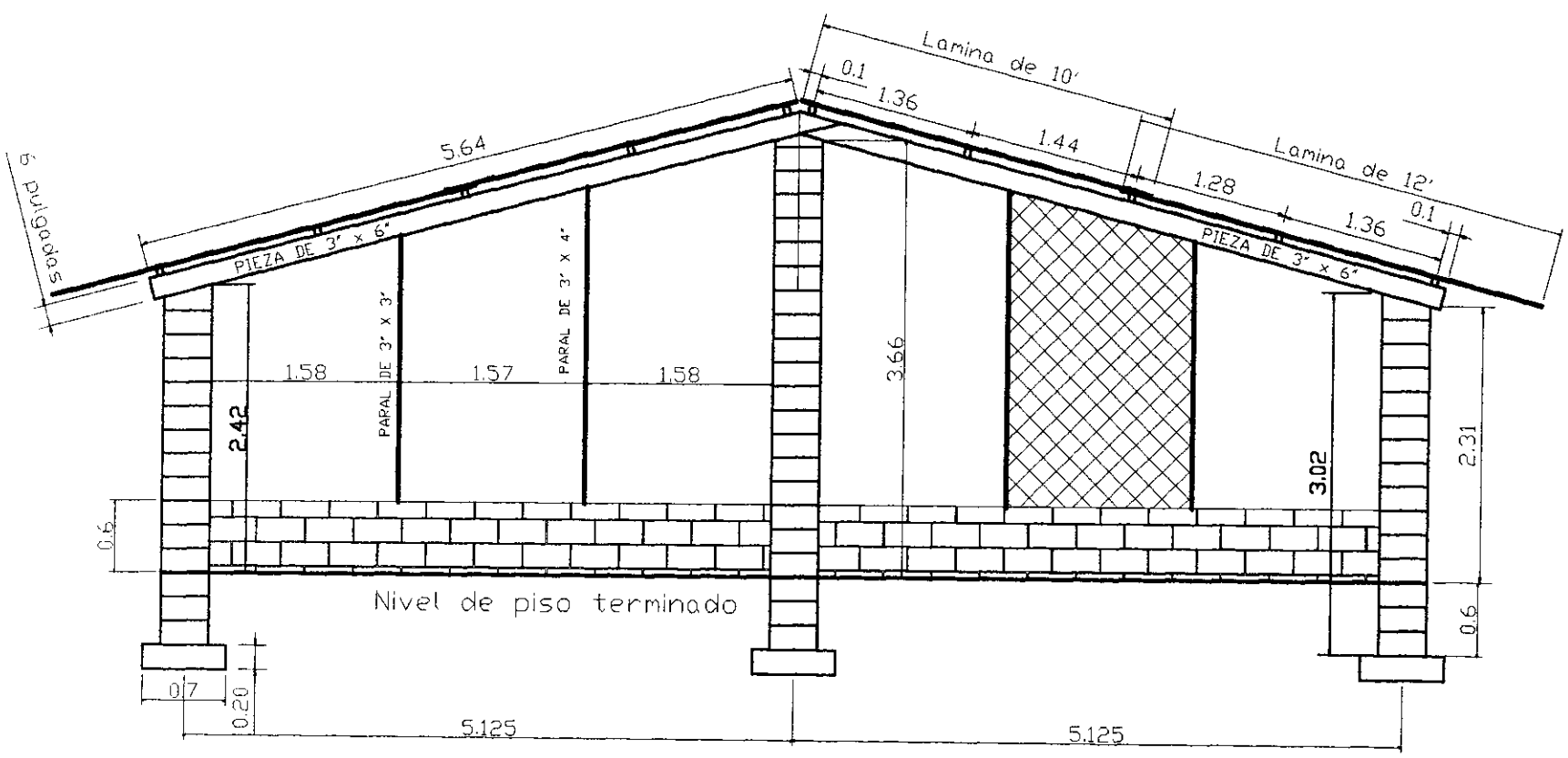
**AGIL**  
**GALLINERO TIPICO (2)**  
**PARA 1500 GALLINAS**  
**Sin escala mayo de 2003**





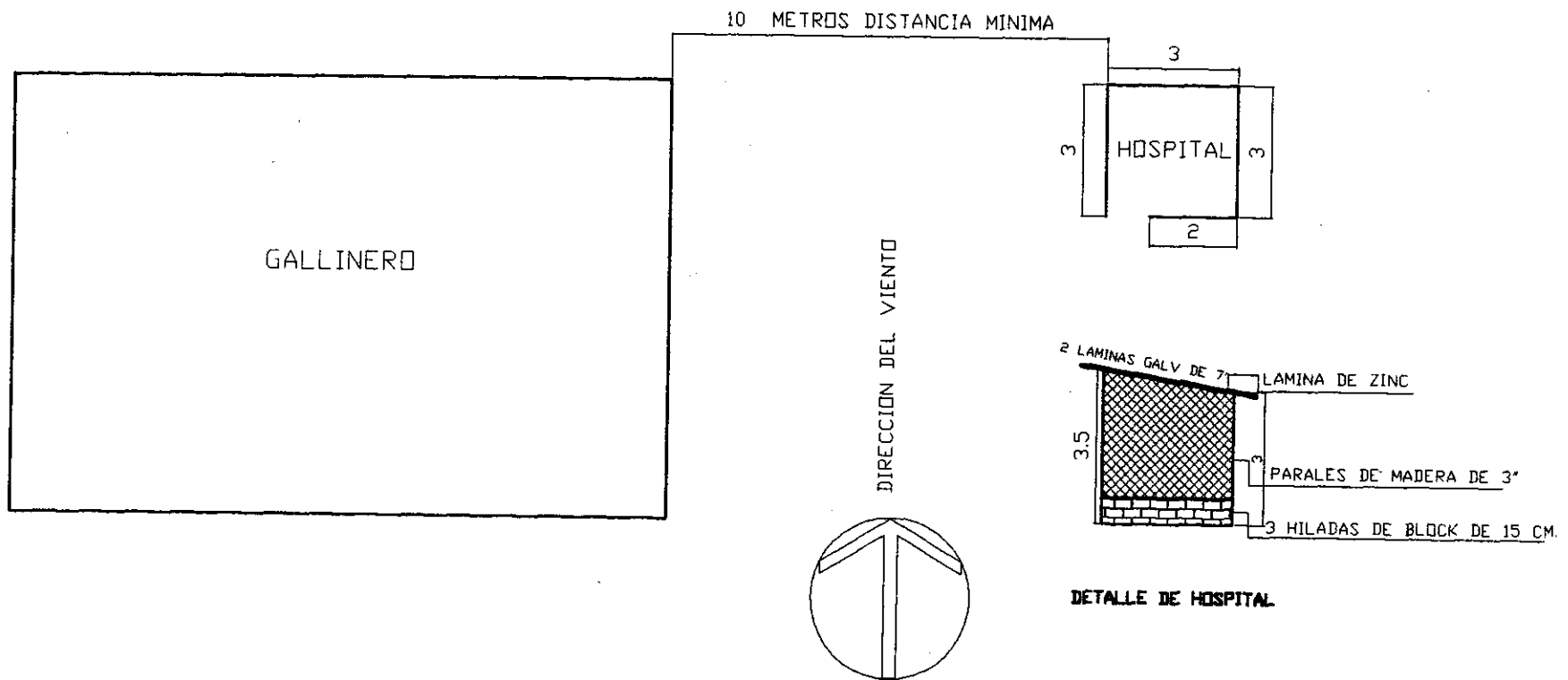
AGIL  
 PROYECTO: GALLINERO TIPO (2)  
 PLANO DE ESTRUCTURA  
 Y ENLAMINADO  
 Sin escala mayo de 2003

TIPO ESPECIAL PARA LUGARES CALIDOS



VISTA LATERAL

AGIL  
PROYECTO: GALLINERO TIPO 2  
LOCALIZACION DEL HOSPITAL  
Sin escala mayo de 2003

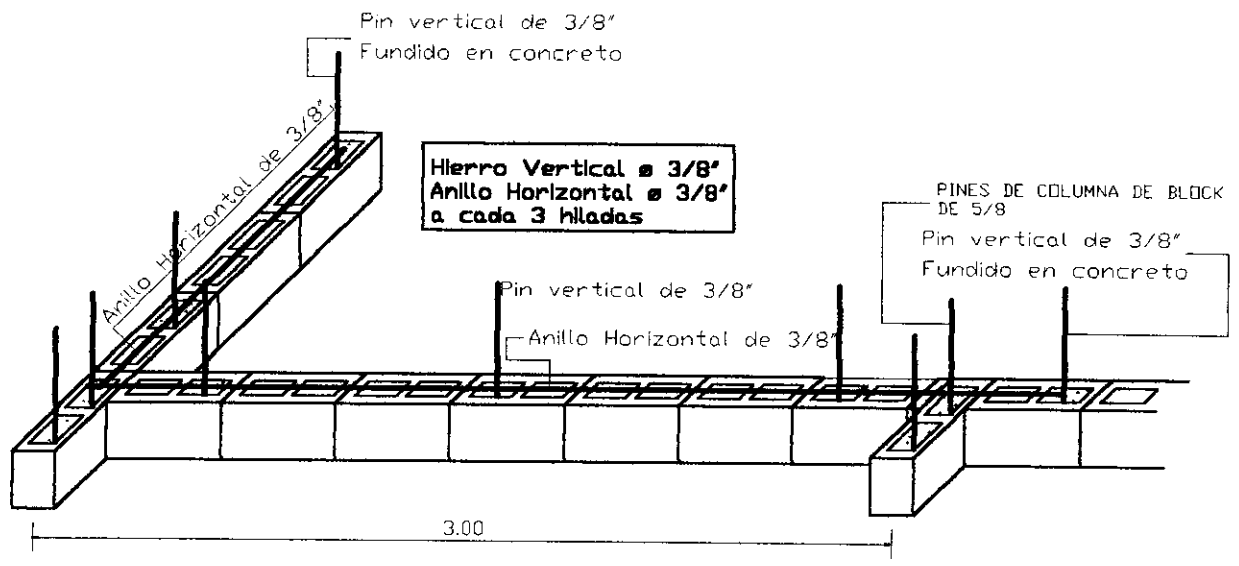


**A G I L**

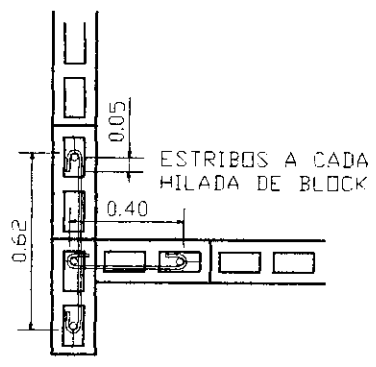
**PROYECTO: GALLINERO TIPO 2  
PLANO DE DETALLE DE REFUERZO  
DE PAREDES Y COLUMNAS**

**Sin escala mayo de 2003**

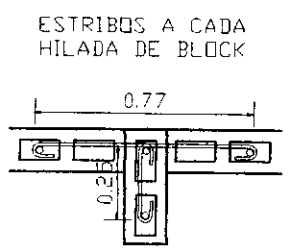
**NOTA IMPORTANTE  
EL ENCADENADO DEL BLOCK  
Y LOS AJUSTES NECESARIOS SE  
EFECTUARAN EN LA OBRA**



**DETALLE DE REFUERZO EN PAREDES Y COLUMNAS  
TRAMO DE 3.00 METROS CENTRO A CENTRO**



**DETALLE DE REFUERZO  
COLUMNA DE ESQUINA**



**DETALLE DE REFUERZO  
COLUMNA INTERMEDIA**

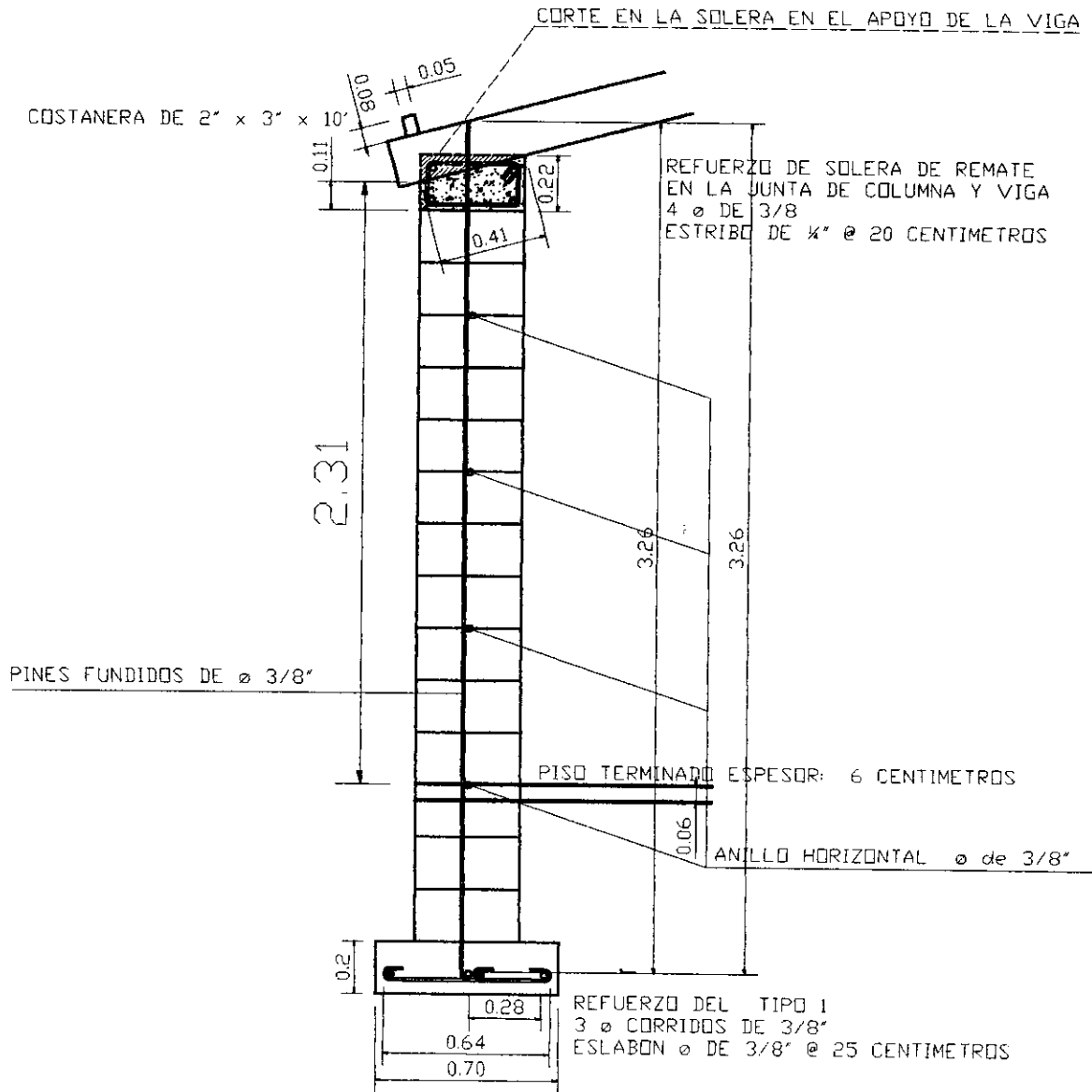
# AGIL

## GALLINERO TÍPICO (2)

### PLANO DE DETALLE DE REFUERZO DE COLUMNAS CIMENTOS Y SOLERA

Sin escala

mayo 03

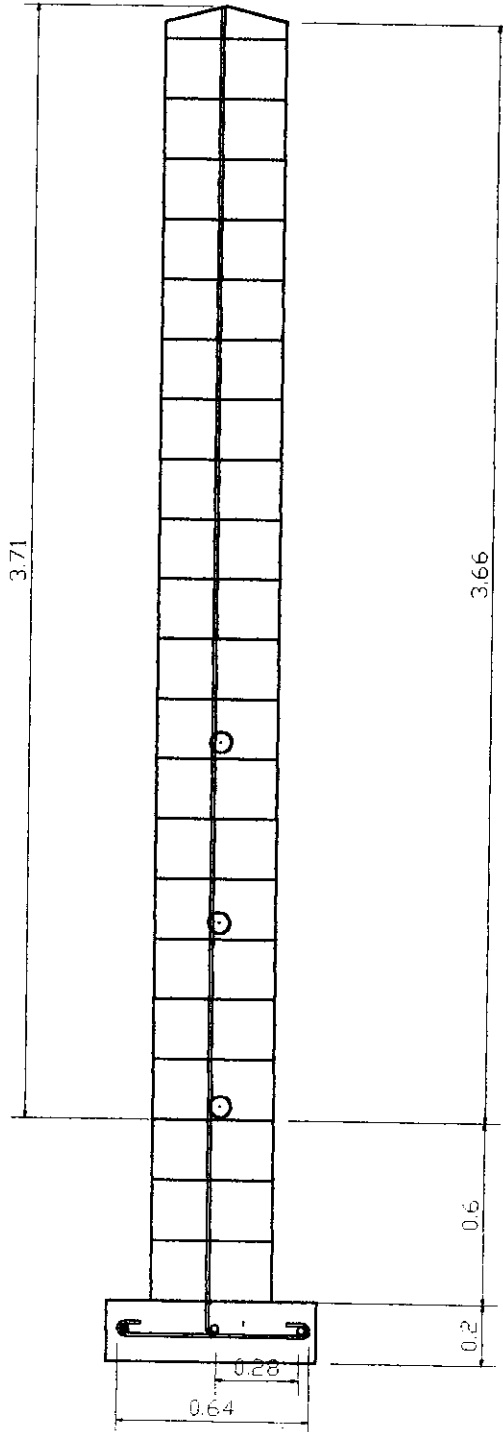


**A G I L**

**GALLINERO TIPICO (2)  
PLANO DE DETALLE DE REFUERZO  
COLUMNA CENTRAL**

*Sin escala*

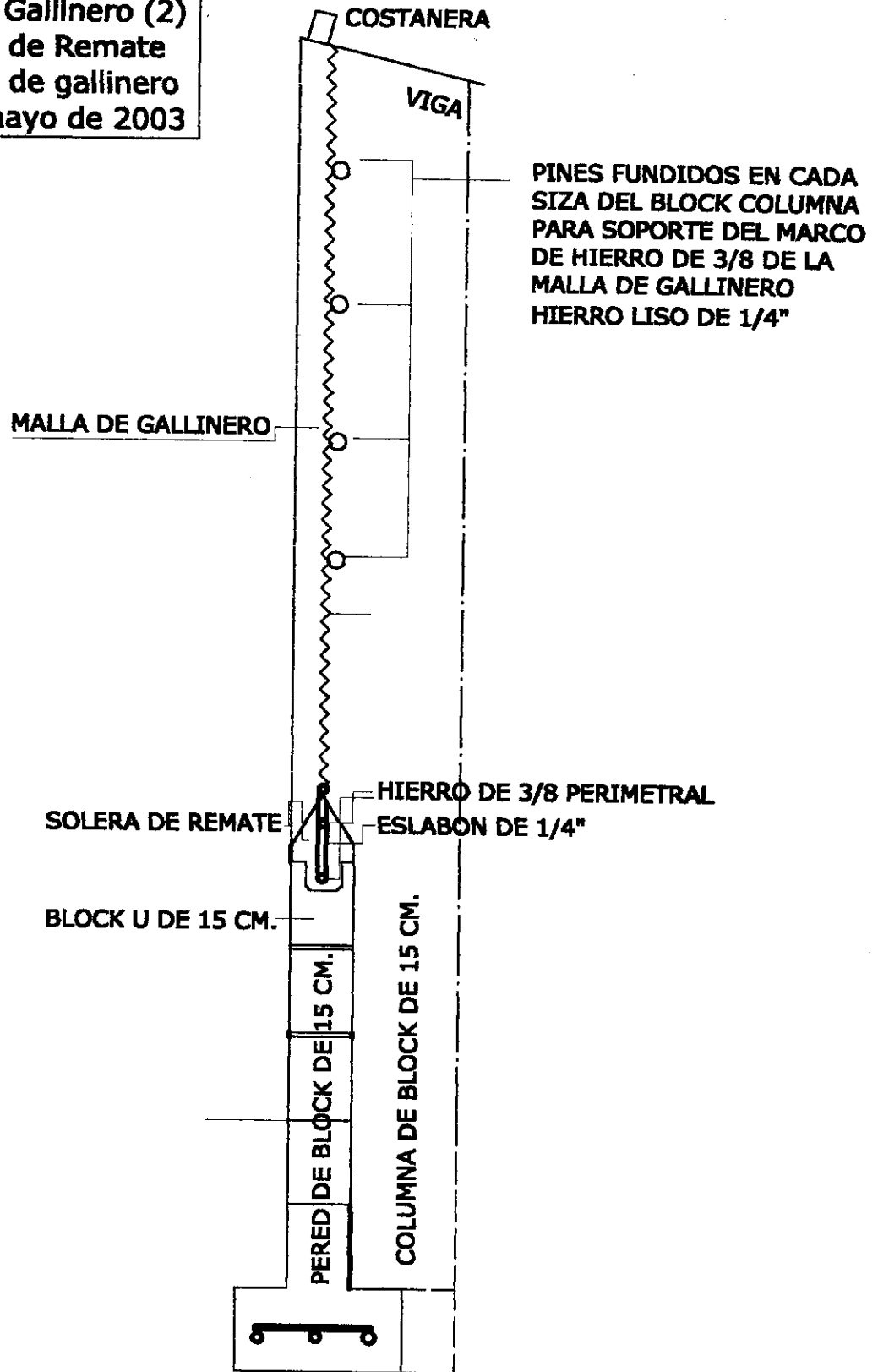
*mayo 03*



REFUERZO DEL CIMIENTO  
3 e CORRIDOS DE 3/8"  
ESLABON e DE 3/8" @ 25 CENTIMETROS

A G I L

Galera Típica Para Gallinero (2)  
Detalle de solera de Remate  
Soportes de Malla de gallinero  
Sin escala mayo de 2003



| AGIL                               |  |         |          |             |          |                  |
|------------------------------------|--|---------|----------|-------------|----------|------------------|
| GALERA PARA 1500 GALLINAS (TIPO 2) |  |         |          |             |          |                  |
| MATERIALES                         |  |         |          |             |          |                  |
| Nº                                 | Renglon                                  | Unidad  | Cantidad | P. Unitario | Total    |                  |
| 1                                  | Concreto Mortero y mezcilon              |         |          |             |          |                  |
| 1.1                                | Arena de Rio                             | M3      | 10       | Q 70.00     | Q        | 700.00           |
| 1.2                                | Piedrin                                  | M3      | 6        | Q 120.00    | Q        | 720.00           |
| 1.4                                | Cemento                                  | Sacos   | 70       | Q 40.00     | Q        | 2,800.00         |
| 2                                  | Cal                                      | Bolsas  | 42       | Q 20.00     | Q        | 840.00           |
| 1                                  | Acero de Refuerzo                        |         |          |             | Q        | -                |
| 2.1                                | Acero corrugado de 3/8                   | Quintal | 6        | Q 130.00    | Q        | 780.00           |
| 2.2                                | Acero liso de 1/4                        | Quintal | 2        | Q 130.00    | Q        | 260.00           |
| 2.3                                | Alambre de amarre                        | Libras  | 40       | Q 2.50      | Q        | 100.00           |
| 3                                  |  |         |          |             | Q        | -                |
| 3.1                                | Paredes de Block de 15 Cm.               | Unidad  | 1100     | Q 2.50      | Q        | 2,750.00         |
| 4                                  | Estructura del techo                     |         |          |             | Q        | -                |
| 4.1                                | Madera                                   |         |          |             | Q        | -                |
| 4.1.1                              | Piezas de 3" x 6" x 20'                  | Unidad  | 12       | Q 75.00     | Q        | 900.00           |
| 4.1.2                              | Piezas de 2" x 3" x 10'                  | Unidad  | 30       | Q 12.50     | Q        | 375.00           |
| 4.1.3                              | Piezas de 2" x 3" x 12'                  | Unidad  | 20       | Q 15.00     | Q        | 300.00           |
| 4.1.4                              | Tornillos de 1/2" x 5"                   | Unidad  | 12       | Q 8.00      | Q        | 96.00            |
| 4.1.5                              | Clavo de 4"                              | Libras  | 50       | Q 2.50      | Q        | 125.00           |
| 4.1.6                              | Clavo de 3"                              | Libras  | 15       | Q 2.50      | Q        | 37.50            |
| 4.2                                | Lamina de cubierta                       |         |          |             | Q        | -                |
| 4.2.1                              | Lamina Galvanizada Cal 28 de 10'         | Unidad  | 46       | Q 44.00     | Q        | 2,024.00         |
| 4.2.2                              | Lamina Galvanizada Cal 28 de 12'         | Unidad  | 46       | Q 53.00     | Q        | 2,438.00         |
| 4.2.3                              | Capotes de lamina Galv. de 6'            | Unidad  | 10       | Q 14.00     | Q        | 140.00           |
| 4.2.4                              | Clavo de Lamina                          | Libras  | 10       | Q 2.50      | Q        | 25.00            |
| 5                                  | Ponederos (Tabla de 10')                 | Unidad  | 42       | Q 25.00     | Q        | 1,050.00         |
| 6                                  | Malla de galinero (Rollo de 25 Mts)      | Rollo   | 3.5      | Q 300.00    | Q        | 1,050.00         |
| 7                                  | Tubos PVC de 1/2"                        | Unidad  | 15       | Q 15.00     | Q        | 225.00           |
| 8                                  | Tubos PVC de 3/4"                        | Unidad  | 7        | Q 20.00     | Q        | 140.00           |
| 9                                  | Accesorios                               | Global  |          |             | Q        | 150.00           |
| 10                                 | Transporte                               |         |          |             | Q        | 900.00           |
| 11                                 | Bebederos y Comederos                    |         |          |             | Q        | 2,500.00         |
|                                    | Total Materiales                         |         |          |             | Q        | 21,425.50        |
| 12                                 | Mano de Obra calificada                  |         |          |             |          |                  |
|                                    | 2 Albañiles 30 dias                      |         |          |             | Q        | 3,000.00         |
|                                    | <b>TOTAL (Materiales + Mano de obra)</b> |         |          |             | <b>Q</b> | <b>24,425.50</b> |
|                                    | NO INCLUYE MOVIMIENTO DE TIERRAS         |         |          |             |          |                  |
|                                    |  |         |          |             |          | May-03           |

### **III. Análisis Económica**

**Resumen de Proyección para Cuatro Años:  
Iniciando con 500 Aves y Llegando a 1,500**

**Proyección para Cuatro Años:  
Inicia con 500 Aves con Proyección a 1,500 Aves**

**Flujo y Egreso para 500 Gallinas**

**Cálculo de Tasa Interna de Retorno y Valor Actual Neto**



**Resume de Proyección para Cuatro Años:  
Iniciando con 500 Aves y Llegando a 1,500**

**PROYECTO DE GALLINAS PONEDORAS**  
**PROYECCION PARA 4 AÑOS**  
**INICIANDO CON 500 AVES Y LLEGANDO A 1500.**

(Base hoja de costos por lote y hoja de proyeccion 1500 aves de este mismo libro)

**GENERACION DE INGRESOS LOCALES**

Pago de galeristas, se estima galerista por cada 500 aves.

Optimo

1 galeritas por 1500 aves.

Remanentes en venta de huevos

Utilizacion de ganancias acumuladas para servicios a asociadas.

| Integración de Inversión Inicial  | Parcial         | Total                   |
|-----------------------------------|-----------------|-------------------------|
| <b>Aporte Agil</b>                |                 | 38,000.00               |
| Construccion de gallinero         | 23,000.00       |                         |
| Compra de aves                    | 11,500.00       |                         |
| Credito para concentrado 4 sem.   | <u>3,500.00</u> |                         |
| <b>Aporte Comunitario</b>         |                 | 9,000.00                |
| Materiales construccion de galera | <u>9,000.00</u> |                         |
| <b>Total inversion</b>            |                 | <u><u>47,000.00</u></u> |

| Balance General                         | Año 1                               | Año 2            | Año 3            | Año 4             | Acumulado         |
|---|-------------------------------------|------------------|------------------|-------------------|-------------------|
|   | (PROYECTADO) Expresado en Quetzales |                  |                  |                   |                   |
| <b>ACTIVOS</b>                          |                                     |                  |                  |                   |                   |
| Efectivo                                | 2,400.00                            | 14,700.00        | 33,300.00        | 57,700.00         | 57,700.00         |
| Aves                                    | 34,500.00                           | 34,500.00        | 34,500.00        | 34,500.00         | 34,500.00         |
| Gallinero                               | 32,000.00                           | 32,000.00        | 32,000.00        | 32,000.00         | 32,000.00         |
| <b>Total Activo</b>                     | <b>68,900.00</b>                    | <b>81,200.00</b> | <b>99,800.00</b> | <b>124,200.00</b> | <b>124,200.00</b> |
| <b>PASIVO Y CAPITAL</b>                 |                                     |                  |                  |                   |                   |
| <b>PASIVO</b>                           |                                     |                  |                  |                   |                   |
| Cuentas por pagar aves                  | 7,000.00                            | -                |                  |                   |                   |
| <b>CAPITAL</b>                          |                                     |                  |                  |                   |                   |
| <b>Capital donado</b>                   |                                     |                  |                  |                   |                   |
| Donacion inicial Agil                   | 38,000.00                           | 38,000.00        | 38,000.00        | 38,000.00         | 38,000.00         |
| <b>Capital propio</b>                   |                                     |                  |                  |                   |                   |
| Aporte asociados construccion gallinero | 9,000.00                            | 9,000.00         | 9,000.00         | 9,000.00          | 9,000.00          |
| Utilidad del periodo                    | 14,900.00                           | 19,300.00        | 18,600.00        | 24,400.00         |                   |
| Utilidades capitalizadas                |                                     | 14,900.00        | 34,200.00        | 52,800.00         | 77,200.00         |
| <b>Total pasivo y capital</b>           | <b>68,900.00</b>                    | <b>81,200.00</b> | <b>99,800.00</b> | <b>124,200.00</b> | <b>124,200.00</b> |

| Estado de Ingresos y Gastos                       | Año 1                               | Año 2            | Año 3            | Año 4            | Total             |
|---|-------------------------------------|------------------|------------------|------------------|-------------------|
|   | (PROYECTADO) Expresado en Quetzales |                  |                  |                  |                   |
| Ingresos  | 101,900.00                          | 194,300.00       | 193,900.00       | 200,300.00       | 690,400.00        |
| Menos costos y gastos de produccion               | 81,600.00                           | 166,000.00       | 165,700.00       | 163,900.00       | 577,200.00        |
| <b>Excedente bruto</b>                            | <b>20,300.00</b>                    | <b>28,300.00</b> | <b>28,200.00</b> | <b>36,400.00</b> | <b>113,200.00</b> |
| Menos gastos de administracion                    | 5,400.00                            | 9,000.00         | 9,600.00         | 12,000.00        | 36,000.00         |
| <b>Excedente neto por año</b>                     | <b>14,900.00</b>                    | <b>19,300.00</b> | <b>18,600.00</b> | <b>24,400.00</b> | <b>77,200.00</b>  |
| <b>Rentabilidad anual sobre inversion inicial</b> |                                     |                  |                  |                  |                   |
|   | 47,000                              | 0.32             | 0.41             | 0.40             | 0.52              |
|   |                                     |                  |                  |                  | 1.64              |

**Proyección para Cuatro Años:  
Inicia con 500 Aves con Proyección a 1,500 Aves**

**PROYECTO DE GALLINAS PONEDORAS  
PROYECCION PARA CUATRO AÑOS  
INICIA CON 500 AVES CON PROYECCION A 1500 AVES  
(Los cambios de color indican incremento o renovación de aves)**



Apoyo a la generación de **ingresos** locales

| Forma de Pago de Lote de Aves    | Contado   |          |          |          | Credito  |            |           |           |           |           |
|----------------------------------|-----------|----------|----------|----------|----------|------------|-----------|-----------|-----------|-----------|
| Meses                            | 1         | 2        | 3        | 4        | 5        | 6          | 7         | 8         | 9         | 10        |
| Numero Aves en la Granja         | 500       | 500      | 500      | 500      | 500      | 1000       | 1000      | 1000      | 1000      | 1000      |
| Aporte de capital semilla        | 15,000.00 |          |          |          |          |            |           |           |           |           |
| Ingresos: Lotes 1, 4 y 7.        | 1,533.00  | 4,087.50 | 6,247.50 | 6,247.50 | 6,112.50 | 6,141.68   | 5,969.03  | 5,863.88  | 5,676.30  | 5,571.15  |
| Ingresos lotes: 2, 5 y 8         |           |          |          |          |          | 1,533.00   | 4,087.50  | 6,247.50  | 6,247.50  | 6,112.50  |
| Ingresos lotes: 3, 6 y 9.        |           |          |          |          |          |            |           |           |           |           |
| <b>Total Ingresos</b>            | 16,533.00 | 4,087.50 | 6,247.50 | 6,247.50 | 6,112.50 | 7,674.68   | 10,056.53 | 12,111.38 | 11,923.80 | 11,683.65 |
| Compra aves, lotes: 1, 4, y 7    | 11,500.00 |          |          |          |          |            |           |           |           |           |
| Costos lotes. 1,4, y 7.          | 3,746.00  | 4,197.50 | 4,199.00 | 4,199.00 | 4,197.50 | 4,120.10   | 4,104.05  | 4,088.75  | 4,079.60  | 4,064.30  |
| Compra aves lotes: 2,5 y 8.      |           |          |          |          |          | 5,000.00   | 1,000.00  | 2,000.00  | 3,000.00  | 1,000.00  |
| Costos lotes:2,5, y 8.           |           |          |          |          |          | 3,746.00   | 4,197.50  | 4,199.00  | 4,199.00  | 4,197.50  |
| Compra aves lotes. 3,6 y 9.      |           |          |          |          |          |            |           |           |           |           |
| Costos lotes: 3,6 y 9            |           |          |          |          |          |            |           |           |           |           |
| <b>Total Costos</b>              | 15,246.00 | 4,197.50 | 4,199.00 | 4,199.00 | 4,197.50 | 12,866.10  | 9,301.55  | 10,287.75 | 11,278.60 | 9,261.80  |
| Calculo incremental estimado     | 300.00    | 300.00   | 300.00   | 300.00   | 300.00   | 300.00     | 600.00    | 600.00    | 600.00    | 600.00    |
| <b>Total Costos y Gastos</b>     | 15,546.00 | 4,497.50 | 4,499.00 | 4,499.00 | 4,497.50 | 13,166.10  | 9,901.55  | 10,887.75 | 11,878.60 | 9,861.80  |
| Diferencia entre costos y gastos | 987.00    | (410.00) | 1,748.50 | 1,748.50 | 1,615.00 | (5,491.43) | 154.98    | 1,223.63  | 45.20     | 1,821.85  |
| <b>Acumulaciones</b>             | 987.00    | 577.00   | 2,325.50 | 4,074.00 | 5,689.00 | 197.58     | 352.55    | 1,576.18  | 1,621.38  | 3,443.23  |

| Meses                            | Contado   |            |           |           |           |           | Cotado      |           |           |           |
|----------------------------------|-----------|------------|-----------|-----------|-----------|-----------|-------------|-----------|-----------|-----------|
|                                  | 11        | 12         | 13        | 14        | 15        | 16        | 17          | 18        | 19        | 20        |
| Numero aves en la granja         | 1000      | 1500       | 1500      | 1500      | 1500      | 1500      | 1500        | 1500      | 1500      | 1500      |
| Aporte de capital semilla        |           |            |           |           |           |           |             |           |           |           |
| Ingresos: Lotes 1, 4 y 7.        | 5,398.50  | 5,210.93   | 4,580.78  | 4,295.70  | 4,130.63  | 9,700.08  | 1,533.00    | 4,087.50  | 6,247.50  | 6,247.50  |
| Ingresos lotes: 2, 5 y 8         | 6,141.68  | 5,969.03   | 5,863.88  | 5,676.30  | 5,571.15  | 5,398.50  | 5,210.93    | 4,580.78  | 4,295.70  | 4,130.63  |
| Ingresos lotes: 3, 6 y 9.        |           | 1,533.00   | 4,087.50  | 6,247.50  | 6,247.50  | 6,112.50  | 6,141.68    | 5,969.03  | 5,863.88  | 5,676.30  |
| <b>Total ingresos</b>            | 11,540.18 | 12,712.95  | 14,532.15 | 16,219.50 | 15,949.28 | 21,211.08 | 12,885.60   | 14,637.30 | 16,407.08 | 16,054.43 |
| Compra aves, lotes: 1, 4, y 7    |           |            |           |           |           |           | 11,500.00   |           |           |           |
| Costos lotes. 1,4, y 7.          | 4,048.25  | 4,039.10   | 4,023.80  | 4,013.15  | 4,004.00  | 2,111.90  | 3,746.00    | 4,197.50  | 4,199.00  | 4,199.00  |
| Compra aves lotes: 2,5 y 8.      |           |            |           |           |           |           |             |           |           |           |
| Costos lotes:2,5, y 8.           | 4,120.10  | 4,104.05   | 4,088.75  | 4,079.60  | 4,064.30  | 4,048.25  | 4,039.10    | 4,023.80  | 4,013.15  | 4,004.00  |
| Compra aves lotes. 3,6 y 9.      |           | 4,000.00   | 2,000.00  | 2,000.00  | 3,000.00  |           |             |           |           |           |
| Costos lotes: 3,6 y 9            |           | 3,746.00   | 4,197.50  | 4,199.00  | 4,199.00  | 4,197.50  | 4,120.10    | 4,104.05  | 4,088.75  | 4,079.60  |
| <b>Total costos</b>              | 8,168.35  | 15,889.15  | 14,310.05 | 14,291.75 | 15,267.30 | 10,357.65 | 23,405.20   | 12,325.35 | 12,300.90 | 12,282.60 |
| Calculo incremental estimano     | 600.00    | 600.00     | 600.00    | 600.00    | 600.00    | 800.00    | 800.00      | 800.00    | 800.00    | 800.00    |
| <b>Total costos y gastos</b>     | 8,768.35  | 16,489.15  | 14,910.05 | 14,891.75 | 15,867.30 | 11,157.65 | 24,205.20   | 13,125.35 | 13,100.90 | 13,082.60 |
| Diferencia entre costos y gastos | 2,771.83  | (3,776.20) | (377.90)  | 1,327.75  | 81.98     | 10,053.43 | (11,319.60) | 1,511.95  | 3,306.18  | 2,971.83  |
| <b>Acumulaciones</b>             | 6,215.05  | 2,438.85   | 2,060.95  | 3,388.70  | 3,470.68  | 13,524.10 | 2,204.50    | 3,716.45  | 7,022.63  | 9,994.45  |

| Meses                            | 21        | 22          | 23        | 24        | 25        | 26        | 27        | 28          | 29        | 30        |
|----------------------------------|-----------|-------------|-----------|-----------|-----------|-----------|-----------|-------------|-----------|-----------|
| <b>Numero aves en la granja</b>  | 1500      | 1500        | 1500      | 1500      | 1500      | 1500      | 1500      | 1500        | 1500      | 1500      |
| Aporte de capital semilla        |           |             |           |           |           |           |           |             |           |           |
| Ingresos: Lotes 1, 4 y 7.        | 6,112.50  | 6,141.68    | 5,969.03  | 5,863.88  | 5,676.30  | 5,571.15  | 5,398.50  | 5,210.93    | 4,580.78  | 4,295.70  |
| Ingresos lotes: 2, 5 y 8         | 9,700.08  | 1,533.00    | 4,087.50  | 6,247.50  | 6,247.50  | 6,112.50  | 6,141.68  | 5,969.03    | 5,863.88  | 5,676.30  |
| Ingresos lotes: 3, 6 y 9.        | 5,571.15  | 5,398.50    | 5,210.93  | 4,580.78  | 4,295.70  | 4,130.63  | 9,700.08  | 1,533.00    | 4,087.50  | 6,247.50  |
| <b>Total ingresos</b>            | 21,383.73 | 13,073.18   | 15,267.45 | 16,692.15 | 16,219.50 | 15,814.28 | 21,240.25 | 12,712.95   | 14,532.15 | 16,219.50 |
| Compra aves, lotes: 1, 4, y 7    |           |             |           |           |           |           |           |             |           |           |
| Costos lotes. 1,4, y 7.          | 4,197.50  | 4,120.10    | 4,104.05  | 4,088.75  | 4,079.60  | 4,064.30  | 4,048.25  | 4,039.10    | 4,023.80  | 4,013.15  |
| Compra aves lotes: 2,5 y 8.      |           | 11,500.00   |           |           |           |           |           |             |           |           |
| Costos lotes:2,5, y 8.           | 2,111.90  | 3,746.00    | 4,197.50  | 4,199.00  | 4,199.00  | 4,197.50  | 4,120.10  | 4,104.05    | 4,088.75  | 4,079.60  |
| Compra aves lotes. 3,6 y 9.      |           |             |           |           |           |           |           | 11,500.00   |           |           |
| Costos lotes: 3,6 y 9            | 4,064.30  | 4,048.25    | 4,039.10  | 4,023.80  | 4,013.15  | 4,004.00  | 2,111.90  | 3,746.00    | 4,197.50  | 4,199.00  |
| <b>Total costos</b>              | 10,373.70 | 23,414.35   | 12,340.65 | 12,311.55 | 12,291.75 | 12,265.80 | 10,280.25 | 23,389.15   | 12,310.05 | 12,291.75 |
| Calculo incremental estimano     | 800.00    | 800.00      | 800.00    | 800.00    | 800.00    | 800.00    | 800.00    | 800.00      | 800.00    | 800.00    |
| <b>Total costos y gastos</b>     | 11,173.70 | 24,214.35   | 13,140.65 | 13,111.55 | 13,091.75 | 13,065.80 | 11,080.25 | 24,189.15   | 13,110.05 | 13,091.75 |
| Diferencia entre costos y gastos | 10,210.03 | (11,141.18) | 2,126.80  | 3,580.60  | 3,127.75  | 2,748.48  | 10,160.00 | (11,476.20) | 1,422.10  | 3,127.75  |
| <b>Acumulaciones</b>             | 20,204.48 | 9,063.30    | 11,190.10 | 14,770.70 | 17,898.45 | 20,646.93 | 30,806.93 | 19,330.73   | 20,752.83 | 23,880.58 |

| Meses                            | 31        | 32        | 33          | 34        | 35        | 36        | 37        | 38          | 39        | 40        |
|----------------------------------|-----------|-----------|-------------|-----------|-----------|-----------|-----------|-------------|-----------|-----------|
| <b>Numero aves en la granja</b>  | 1500      | 1500      | 1500        | 1500      | 1500      | 1500      | 1500      | 1500        | 1500      | 1500      |
| Aporte de capital semilla        |           |           |             |           |           |           |           |             |           |           |
| Ingresos: Lotes 1, 4 y 7.        | 4,130.63  | 9,700.08  | 1,533.00    | 4,087.50  | 6,247.50  | 6,247.50  | 6,112.50  | 6,141.68    | 5,969.03  | 5,863.88  |
| Ingresos lotes: 2, 5 y 8         | 5,571.15  | 5,398.50  | 5,210.93    | 4,580.78  | 4,295.70  | 4,130.63  | 9,700.08  | 1,533.00    | 4,087.50  | 6,247.50  |
| Ingresos lotes: 3, 6 y 9.        | 6,247.50  | 6,112.50  | 6,141.68    | 5,969.03  | 5,863.88  | 5,676.30  | 5,571.15  | 5,398.50    | 5,210.93  | 4,580.78  |
| <b>Total ingresos</b>            | 15,949.28 | 21,211.08 | 12,885.60   | 14,637.30 | 16,407.08 | 16,054.43 | 21,383.73 | 13,073.18   | 15,267.45 | 16,692.15 |
| Compra aves, lotes: 1, 4, y 7    |           |           | 11,500.00   |           |           |           |           |             |           |           |
| Costos lotes. 1,4, y 7.          | 4,004.00  | 2,111.90  | 3,746.00    | 4,197.50  | 4,199.00  | 4,199.00  | 4,197.50  | 4,120.10    | 4,104.05  | 4,088.75  |
| Compra aves lotes: 2,5 y 8.      |           |           |             |           |           |           |           | 11,500.00   |           |           |
| Costos lotes:2,5, y 8.           | 4,064.30  | 4,048.25  | 4,039.10    | 4,023.80  | 4,013.15  | 4,004.00  | 2,111.90  | 3,746.00    | 4,197.50  | 4,199.00  |
| Compra aves lotes. 3,6 y 9.      |           |           |             |           |           |           |           |             |           |           |
| Costos lotes: 3,6 y 9            | 4,199.00  | 4,197.50  | 4,120.10    | 4,104.05  | 4,088.75  | 4,079.60  | 4,064.30  | 4,048.25    | 4,039.10  | 4,023.80  |
| <b>Total costos</b>              | 12,267.30 | 10,357.65 | 23,405.20   | 12,325.35 | 12,300.90 | 12,282.60 | 10,373.70 | 23,414.35   | 12,340.65 | 12,311.55 |
| Calculo incremental estimado     | 800.00    | 800.00    | 800.00      | 800.00    | 800.00    | 800.00    | 1,000.00  | 1,000.00    | 1,000.00  | 1,000.00  |
| <b>Total costos y gastos</b>     | 13,067.30 | 11,157.65 | 24,205.20   | 13,125.35 | 13,100.90 | 13,082.60 | 11,373.70 | 24,414.35   | 13,340.65 | 13,311.55 |
| Diferencia entre costos y gastos | 2,881.98  | 10,053.43 | (11,319.60) | 1,511.95  | 3,306.18  | 2,971.83  | 10,010.03 | (11,341.18) | 1,926.80  | 3,380.60  |
| <b>Acumulaciones</b>             | 26,762.55 | 36,815.98 | 25,496.38   | 27,008.33 | 30,314.50 | 33,286.33 | 43,296.35 | 31,955.18   | 33,881.98 | 37,262.58 |

| Meses                            | 41        | 42        | 43        | 44          | 45        | 46        | 47        | 48        | Totales           |
|----------------------------------|-----------|-----------|-----------|-------------|-----------|-----------|-----------|-----------|-------------------|
| <b>Numero aves en la granja</b>  | 1500      | 1500      | 1500      | 1500        | 1500      | 1500      | 1500      | 1500      |                   |
| Aporte de capital semilla        |           |           |           |             |           |           |           |           | <b>15,000.00</b>  |
| Ingresos: Lotes 1, 4 y 7.        | 5,676.30  | 5,571.15  | 5,398.50  | 5,210.93    | 4,580.78  | 4,295.70  | 4,130.63  | 9,700.08  | <b>260,299.88</b> |
| Ingresos lotes: 2, 5 y 8         | 6,247.50  | 6,112.50  | 6,141.68  | 5,969.03    | 5,863.88  | 5,676.30  | 5,571.15  | 5,398.50  | <b>232,381.78</b> |
| Ingresos lotes: 3, 6 y 9.        | 4,295.70  | 4,130.63  | 9,700.08  | 1,533.00    | 4,087.50  | 6,247.50  | 6,247.50  | 6,112.50  | <b>197,761.25</b> |
| <b>Total ingresos</b>            | 16,219.50 | 15,814.28 | 21,240.25 | 12,712.95   | 14,532.15 | 16,219.50 | 15,949.28 | 21,211.08 | <b>705,442.90</b> |
| Compra aves, lotes: 1, 4, y 7    |           |           |           |             |           |           |           |           | <b>34,500.00</b>  |
| Costos lotes. 1,4, y 7.          | 4,079.60  | 4,064.30  | 4,048.25  | 4,039.10    | 4,023.80  | 4,013.15  | 4,004.00  | 2,111.90  | <b>189,708.00</b> |
| Compra aves lotes: 2,5 y 8.      |           |           |           |             |           |           |           |           | <b>35,000.00</b>  |
| Costos lotes:2,5, y 8.           | 4,199.00  | 4,197.50  | 4,120.10  | 4,104.05    | 4,088.75  | 4,079.60  | 4,064.30  | 4,048.25  | <b>171,516.05</b> |
| Compra aves lotes. 3,6 y 9.      |           |           |           | 11,500.00   |           |           |           |           | <b>34,000.00</b>  |
| Costos lotes: 3,6 y 9            | 4,013.15  | 4,004.00  | 2,111.90  | 3,746.00    | 4,197.50  | 4,199.00  | 4,199.00  | 4,197.50  | <b>147,011.00</b> |
| <b>Total costos</b>              | 12,291.75 | 12,265.80 | 10,280.25 | 23,389.15   | 12,310.05 | 12,291.75 | 12,267.30 | 10,357.65 | <b>611,735.05</b> |
| Calculo incremental estimano     | 1,000.00  | 1,000.00  | 1,000.00  | 1,000.00    | 1,000.00  | 1,000.00  | 1,000.00  | 1,000.00  | <b>36,000.00</b>  |
| <b>Total costos y gastos</b>     | 13,291.75 | 13,265.80 | 11,280.25 | 24,389.15   | 13,310.05 | 13,291.75 | 13,267.30 | 11,357.65 | <b>647,735.05</b> |
| Diferencia entre costos y gastos | 2,927.75  | 2,548.48  | 9,960.00  | (11,676.20) | 1,222.10  | 2,927.75  | 2,681.98  | 9,853.43  | <b>57,707.85</b>  |
| <b>Acumulaciones</b>             | 40,190.33 | 42,738.80 | 52,698.80 | 41,022.60   | 42,244.70 | 45,172.45 | 47,854.43 | 57,707.85 |                   |



## **Flujo y Egreso para 500 Gallinas**

**Apoyo a La Generación de Ingresos Locales (AGIL)**  
**Proyecto de Granja Comunal de Gallinas Ponedoras**



**Hoja de Flujo de Ingresos y Egresos para 500 Gallinas**

|                              | <b>Antes</b>     | <b>Hoy</b>       |
|------------------------------|------------------|------------------|
| <b>Apoyo para Galera</b>     | 23,000.00        | 25,000.00        |
| <b>Compra de Gallinas</b>    | 11,500.00        | 37,500.00        |
| <b>Concentrado 4 Semanas</b> | 3,500.00         | 9,700.00         |
| <b>Total Aporte Inicial</b>  | <b>38,000.00</b> | <b>72,200.00</b> |

**DATOS DEL PROGRAMA**

| <b>MESES</b>                     |                                 | 1        | 2     | 3     | 4     | 5     | 6      | 7      | 8      | 9     | 10    | 11    | 12     | 13     | 14   | 15     | 16     | Total   |
|----------------------------------|---------------------------------|----------|-------|-------|-------|-------|--------|--------|--------|-------|-------|-------|--------|--------|------|--------|--------|---------|
| Numero de aves                   | 500                             |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |
| Porcentaje de postura            |                                 | 0.4      | 0.9   | 0.92  | 0.92  | 0.9   | 0.88   | 0.85   | 0.83   | 0.8   | 0.78  | 0.75  | 0.72   | 0.7    | 0.65 | 0.62   | 0.6    |         |
| Produccion total mensual         |                                 | 6000     | 13500 | 13800 | 13800 | 13500 | 13200  | 12750  | 12450  | 12000 | 11700 | 11250 | 10800  | 10500  | 9750 | 9300   | 9000   | 183,300 |
| Descartes total mensual          |                                 | 0        | 0     | 0     | 0     | 0     | 11     | 13     | 15     | 16    | 18    | 20    | 21     | 23     | 24   | 25     | 299    | 485     |
| Consumo alimento mensual         |                                 | 33       | 37.5  | 37.5  | 37.5  | 37.5  | 36.675 | 36.525 | 36.375 | 36.3  | 36.15 | 36    | 35.925 | 35.775 | 35.7 | 35.625 | 15.075 | 559.125 |
| Flete x por qq concentrado       | 5.00                            |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |
| Precio de c/costal               | 1.00                            |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |
| Precio por ave comprada          | 23.00                           |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |
| Precio x por ave descartada      | 15.00                           |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |
| Precio x saco de gallinaza       | 20.00                           | 80 Sacos |       |       |       |       |        |        |        |       |       |       |        |        |      |        | 80     | 80      |
| Precio x por qq de concentrado   | 87.00                           |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |
| Salario diario galerista         | 20.00                           |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |
| Precio x huevo para la venta     |                                 | 0.25     | 0.3   | 0.45  | 0.45  | 0.45  | 0.45   | 0.45   | 0.45   | 0.45  | 0.45  | 0.45  | 0.45   | 0.4    | 0.4  | 0.4    | 0.4    | 6.65    |
| Credito para Construccion galera | -                               |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |
| Credito otorgado                 | -                               |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |
| Amortizaciones                   | 13                              |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |
| Intereses sobre saldos           | 0                               |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |
| Vitaminas y medicamentos         | 80 Mensuales por cada 500 aves. |          |       |       |       |       |        |        |        |       |       |       |        |        |      |        |        |         |

| MESES                          | 1            | 2             | 3             | 4             | 5             | 6              | 7              | 8               | 9              | 10             | 11             | 12              | 13              | 14            | 15              | 16             | Total      |                   |
|--------------------------------|--------------|---------------|---------------|---------------|---------------|----------------|----------------|-----------------|----------------|----------------|----------------|-----------------|-----------------|---------------|-----------------|----------------|------------|-------------------|
| <b>PRODUCTOS Y COSTOS</b>      |              |               |               |               |               |                |                |                 |                |                |                |                 |                 |               |                 |                |            |                   |
| <b>Ingresos y Productos</b>    |              |               |               |               |               |                |                |                 |                |                |                |                 |                 |               |                 |                |            |                   |
| Capital semilla                | 15000        |               |               |               |               |                |                |                 |                |                |                |                 |                 |               |                 |                |            | 15000             |
| Venta de Huevos                | 1500         | 4050          | 6210          | 6210          | 6075          | 5940           | 5737.5         | 5602.5          | 5400           | 5265           | 5062.5         | 4860            | 4200            | 3900          | 3720            | 3600           |            | 77332.5           |
| Venta de costales              | 33           | 37.5          | 37.5          | 37.5          | 37.5          | 36.675         | 36.525         | 36.375          | 36.3           | 36.15          | 36             | 35.925          | 35.775          | 35.7          | 35.625          | 15.075         |            | 559.125           |
| Venta de Gallinas descarte     | 0            | 0             | 0             | 0             | 0             | 165            | 195            | 225             | 240            | 270            | 300            | 315             | 345             | 360           | 375             | 4485           |            | 7275              |
| Venta de gallinaza             |              |               |               |               |               |                |                |                 |                |                |                |                 |                 |               |                 | 1600           |            | 1600              |
| <b>Total ingreso</b>           | <b>16533</b> | <b>4087.5</b> | <b>6247.5</b> | <b>6247.5</b> | <b>6112.5</b> | <b>6141.68</b> | <b>5969.03</b> | <b>5863.875</b> | <b>5676.3</b>  | <b>5571.15</b> | <b>5398.5</b>  | <b>5210.925</b> | <b>4580.775</b> | <b>4295.7</b> | <b>4130.625</b> | <b>9700.08</b> |            | <b>101766.625</b> |
| <b>Costos</b>                  |              |               |               |               |               |                |                |                 |                |                |                |                 |                 |               |                 |                |            |                   |
| Construccion de galera         | 0            |               |               |               |               |                |                |                 |                |                |                |                 |                 |               |                 |                |            |                   |
| Compra de gallinas             | 11500        |               |               |               |               |                |                |                 |                |                |                |                 |                 |               |                 |                |            | 11500             |
| Compra de concentrado          | 2871         | 3262.5        | 3262.5        | 3262.5        | 3262.5        | 3190.73        | 3177.68        | 3164.625        | 3158.1         | 3145.05        | 3132           | 3125.475        | 3112.425        | 3105.9        | 3099.375        | 1311.53        |            | 48643.875         |
| Flete concentrado              | 165          | 187.5         | 187.5         | 187.5         | 187.5         | 183.375        | 182.625        | 181.875         | 181.5          | 180.75         | 180            | 179.625         | 178.875         | 178.5         | 178.125         | 75.375         |            | 2795.625          |
| Salario Galerista              | 20           | 600           | 600           | 600           | 600           | 600            | 600            | 600             | 600            | 600            | 600            | 600             | 600             | 600           | 600             | 600            | 600        | 9600              |
| Vitaminas y medicamentos       | 80           | 80            | 80            | 80            | 80            | 80             | 80             | 80              | 80             | 80             | 80             | 80              | 80              | 80            | 80              | 80             | 80         | 1280              |
| Gastos de venta .005 por unida | 0.005        | 30            | 67.5          | 69            | 69            | 67.5           | 66             | 63.75           | 62.25          | 60             | 58.5           | 56.25           | 54              | 52.5          | 48.75           | 46.5           | 45         | 916.5             |
|                                |              |               |               |               |               |                |                |                 |                |                |                |                 |                 |               |                 |                |            | 0                 |
| <b>Sub-total Egresos</b>       | <b>15246</b> | <b>4197.5</b> | <b>4199</b>   | <b>4199</b>   | <b>4197.5</b> | <b>4120.1</b>  | <b>4104.1</b>  | <b>4088.75</b>  | <b>4079.6</b>  | <b>4064.3</b>  | <b>4048.25</b> | <b>4039.1</b>   | <b>4023.8</b>   | <b>4013.2</b> | <b>4004</b>     | <b>2111.9</b>  |            | <b>74736</b>      |
| <b>Gastos Indirectos</b>       |              |               |               |               |               |                |                |                 |                |                |                |                 |                 |               |                 |                |            |                   |
| Gastos de administracion       | 200          | 200           | 200           | 200           | 200           | 200            | 200            | 200             | 200            | 200            | 200            | 200             | 200             | 200           | 200             | 200            | 200        | 3200              |
| Inprevistos 5% s/cd.           | 100          | 100           | 100           | 100           | 100           | 100            | 100            | 100             | 100            | 100            | 100            | 100             | 100             | 100           | 100             | 100            | 100        | 1600              |
| Gastos financieros             | 0            | 0             | 0             | 0             | 0             | 0              | 0              | 0               | 0              | 0              | 0              | 0               | 0               | 0             | 0               | 0              | 0          | 0                 |
| Amortizacion credito           |              |               |               |               |               |                |                |                 |                |                |                |                 |                 |               |                 |                |            |                   |
| Depreciacion Gallinas          |              |               |               |               |               |                |                |                 |                |                |                |                 |                 |               |                 |                |            |                   |
| <b>Total Gastos Indirectos</b> | <b>300</b>   | <b>300</b>    | <b>300</b>    | <b>300</b>    | <b>300</b>    | <b>300</b>     | <b>300</b>     | <b>300</b>      | <b>300</b>     | <b>300</b>     | <b>300</b>     | <b>300</b>      | <b>300</b>      | <b>300</b>    | <b>300</b>      | <b>300</b>     | <b>300</b> | <b>4800</b>       |
| <b>Total Costos y Gastos</b>   | <b>15546</b> | <b>4497.5</b> | <b>4499</b>   | <b>4499</b>   | <b>4497.5</b> | <b>4420.1</b>  | <b>4404.1</b>  | <b>4388.75</b>  | <b>4379.6</b>  | <b>4364.3</b>  | <b>4348.25</b> | <b>4339.1</b>   | <b>4323.8</b>   | <b>4313.2</b> | <b>4304</b>     | <b>2411.9</b>  |            | <b>79536</b>      |
| <b>Diferencias</b>             | <b>987</b>   | <b>-410</b>   | <b>1748.5</b> | <b>1748.5</b> | <b>1615</b>   | <b>1721.6</b>  | <b>1565</b>    | <b>1475.13</b>  | <b>1296.7</b>  | <b>1206.85</b> | <b>1050.25</b> | <b>871.825</b>  | <b>256.975</b>  | <b>-17.45</b> | <b>-173.38</b>  | <b>7288.2</b>  |            | <b>22230.625</b>  |
| <b>Acumulaciones</b>           | <b>987</b>   | <b>577</b>    | <b>2325.5</b> | <b>4074</b>   | <b>5689</b>   | <b>7410.6</b>  | <b>8975.6</b>  | <b>10450.7</b>  | <b>11747.4</b> | <b>12954.2</b> | <b>14004.5</b> | <b>14876.3</b>  | <b>15133.3</b>  | <b>15116</b>  | <b>14942.5</b>  | <b>22231</b>   |            |                   |

## **Cálculo de Tasa Interna de Retorno y Valor Actual Neto**

## Proyecto de Gallinas Ponedoras, Tipo Pachay

### Calculo de Tasa Interna de Retorno y Valor Actual Neto

#### Análisis a Cuatro Años

(No se incluye en los costos el capital semilla y valor del gallinero)

| Año | Productos  | Costos     | Flujos Netos | 12                |                        | 15                   |                      |                   |                           |
|-----|------------|------------|--------------|-------------------|------------------------|----------------------|----------------------|-------------------|---------------------------|
|     |            |            |              | Actualización 12% | Ingresos Actualización | Costos Actualización | Flujos Actualización | Actualización 15% | Flujos Netos Actualizados |
| 1   | 116,900.00 | 114,500.00 | 2,400.00     | 1.0               | 116,900.00             | 114,500.00           | 2,400.00             | 1.00              | 2,400.00                  |
| 2   | 194,300.00 | 182,000.00 | 12,300.00    | 0.79719388        | 154,894.77             | 145,089.29           | 9,805.48             | 0.76              | 9,300.57                  |
| 3   | 193,900.00 | 175,300.00 | 18,600.00    | 0.71178025        | 138,014.19             | 124,775.08           | 13,239.11            | 0.66              | 12,229.80                 |
| 4   | 200,300.00 | 175,900.00 | 24,400.00    | 0.63551808        | 127,294.27             | 111,787.63           | 15,506.64            | 0.57              | 13,950.78                 |
|     | 705,400.00 | 647,700.00 | 57,700.00    |                   | 537,103.23             | 496,151.99           | 40,951.24            |                   | 37,881.15                 |

VAN        40,951.24  
 Tir            52.02  
 B/C            1.08  
                   12.00            3.00            13.34

#### Análisis Financiero a Cuatro Años

(Se ha incrementado a los costos del año 1, el valor del gallinero)

| Año | Productos  | Costos     | Flujos Netos | 12                |                        | 15                   |                      |                   |                           |
|-----|------------|------------|--------------|-------------------|------------------------|----------------------|----------------------|-------------------|---------------------------|
|     |            |            |              | Actualización 12% | Ingresos Actualización | Costos Actualización | Flujos Actualización | Actualización 15% | Flujos Netos Actualizados |
| 1   | 116,900.00 | 146,500.00 | (29,600.00)  | 1.0               | 116,900.00             | 146,500.00           | (29,600.00)          | 1.00              | (29,600.00)               |
| 2   | 194,300.00 | 182,000.00 | 12,300.00    | 0.79719388        | 154,894.77             | 145,089.29           | 9,805.48             | 0.76              | 9,300.57                  |
| 3   | 193,900.00 | 175,300.00 | 18,600.00    | 0.71178025        | 138,014.19             | 124,775.08           | 13,239.11            | 0.66              | 12,229.80                 |
| 4   | 200,300.00 | 175,900.00 | 24,400.00    | 0.63551808        | 127,294.27             | 111,787.63           | 15,506.64            | 0.57              | 13,950.78                 |
|     | 705,400.00 | 679,700.00 | 25,700.00    |                   | 537,103.23             | 528,151.99           | 8,951.24             |                   | 5,881.15                  |

VAN        8,951.24  
 Tir            20.75  
 B/C            1.02  
                   12.00            3.00            2.92

### Análisis Financiero a Cuatro Años

(Se ha incrementado el costo del gallinero)

(Se ha descontado en los ingresos el aporte del capital semilla)

12

15

| Año | Productos | Costos     | Flujos Netos | Actualización 12% | Ingresos Actualización | Costos Actualización | Flujos Actualización | Actualización 15% | Flujos Netos Actualizados |
|-----|-----------|------------|--------------|-------------------|------------------------|----------------------|----------------------|-------------------|---------------------------|
| 1   | 101900.00 | 146,500.00 | (44,600.00)  | 1.0               | 101,900.00             | 146,500.00           | (44,600.00)          | 1.00              | (447,600.00)              |
| 2   | 194300.00 | 182,000.00 | 12,300.00    | 0.79719388        | 154,894.77             | 145,089.29           | 9,805.48             | 0.76              | 9300.57                   |
| 3   | 193900.00 | 175,300.00 | 18,600.00    | 0.711178025       | 138,014.19             | 124,775.08           | 13,239.11            | 0.66              | 12,229.80                 |
| 4   | 200300.00 | 175,900.00 | 24,400.00    | 0.63551808        | 127,294.27             | 111,787.63           | 15,506.64            | 0.57              | 13,950.78                 |
|     | 690400.00 | 679,700.00 | 10,700.00    |                   | 522,103.23             | 528,151.99           | (6,048.76)           |                   | (9,118.85)                |

VAN (6,048.76)

Tir 6.09

B/C 0.99

12.00 3.00 (1.97)

### Proyección a 5 Años

(Análisis financiero, incrementado el costo del gallinero y descontando en los ingresos

los Q. 15,000.00 aportados por el proyecto en año 1 )

12

15

| Año | Productos | Costos    | Flujos Netos | Actualización 12% | Ingresos Actualización | Costos Actualización | Flujos Actualización | Actualización 15% | Flujos Netos Actualizados |
|-----|-----------|-----------|--------------|-------------------|------------------------|----------------------|----------------------|-------------------|---------------------------|
| 1   | 101900.00 | 146500.00 | (44,600.00)  | 1.0               | 101900.00              | 146500.00            | (44,600.00)          | 1.00              | (44,600.00)               |
| 2   | 194300.00 | 182000.00 | 12300.00     | 0.79719388        | 154894.77              | 145089.29            | 9805.48              | 0.76              | 9300.57                   |
| 3   | 193900.00 | 175300.00 | 18600.00     | 0.711178025       | 138014.19              | 124775.08            | 13239.11             | 0.66              | 12229.80                  |
| 4   | 200300.00 | 175900.00 | 24400.00     | 0.63551808        | 127294.27              | 111787.63            | 15506.64             | 0.57              | 13908.00                  |
| 5   | 196100.00 | 177700.00 | 18400.00     | 0.56742686        | 111272.41              | 100831.75            | 10440.65             | 0.50              | 9148.05                   |
|     | 886500.00 | 857400.00 | 29100.00     |                   | 633375.64              | 628983.75            | 4391.89              |                   | (13.58)                   |

VAN 4,391.89

Tir 14.99

B/C 1.01

12.00 3.00 1.00

# Anexos



# Factors Affecting Egg Production in Backyard Chicken Flocks<sup>1</sup>

J.P. Jacob, H.R. Wilson, R.D. Miles, G. D. Butcher, and F.B. Mather<sup>2</sup>

The laying cycle of a chicken flock usually covers a span of about 12 months. Egg production begins when the birds reach about 18-22 weeks of age, depending on the breed and season. Flock production rises sharply and reaches a peak of about 90%, 6-8 weeks later. Production then gradually declines to about 65% after 12 months of lay. A typical production curve for a laying flock, showing changes in the level of egg production and in egg weight, over time, is given in Figure 1.

in egg production requires a thorough investigation into the history of the flock. Egg production can be affected by such factors as feed consumption (quality and quantity), water intake, intensity and duration of light received, parasite infestation, disease, and numerous management and environmental factors.

There are many factors that can adversely affect egg production. Unraveling the cause of a sudden drop

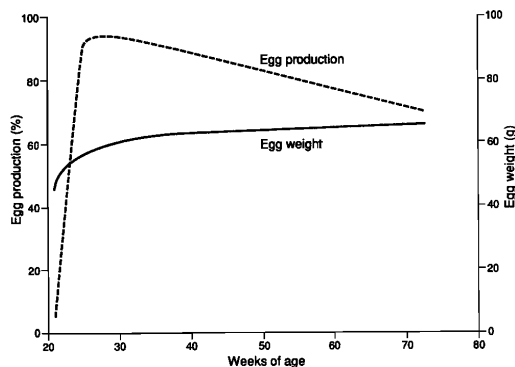


Figure 1. Typical egg production curve.

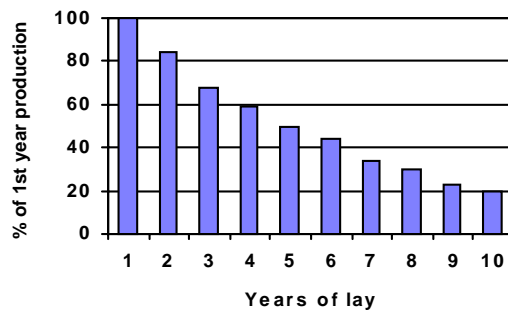


Figure 2. Decline in egg production with age of the hen.

1. This document is Fact Sheet PS35, one of a series of the Dairy and Poultry Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. First published April 1998. Please visit the FAIRS Website at <http://hammock.ifas.ufl.edu>.
2. Jacqueline P. Jacob, poultry extension coordinator, Henry R. Wilson, professor, Richard D. Miles, professor, Dairy and Poultry Sciences Department, and Gary Butcher, extension poultry veterinarian, Faculty of Veterinary Medicine, and F. Ben Mather, poultry extension specialist, Dairy and Poultry Sciences Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611.

The use of trade names in this publication is solely for the purpose of providing specific information. It is not a guarantee or warranty of the products named, and does not signify that they are approved to the exclusion of others of suitable composition.

The Institute of Food and Agricultural Sciences is an equal opportunity/affirmative action employer authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, sex, age, handicap, or national origin. For information on obtaining other extension publications, contact your county Cooperative Extension Service office. Florida Cooperative Extension Service / Institute of Food and Agricultural Sciences / University of Florida / Christine Taylor Waddill, Dean



## Noninfectious Causes

### Aging Hens

Chickens can live for many years and continue to lay eggs for many of these years. However, after two or three years many hens significantly decline in productivity (see Figure 2). This varies greatly from bird to bird. Good layers will lay for about 50 to 60 weeks and then have a rest period called a molt. Poorer layers and older hens will molt more often and lay less consistently. See Table 1.

### Improper Nutrition

Laying chickens require a completely balanced diet to sustain maximum egg production over time. Inadequate nutrition can cause hens to stop laying. Inadequate levels of energy, protein or calcium can cause a drop in egg production. This is why it is so important to supply laying hens with a constant supply of nutritionally balanced layer food. Feeding whole grains, scratch feeds and table scraps will cause the birds diet to become imbalanced and inadequate.

Many times these imbalances can cause other problems like oviductal prolapse. Prolapse may occur when the bird is too fat and/or an egg is too large and the bird's reproductive tract is expelled with the egg. Prolapse usually causes permanent damage to the hen and is fatal in many cases.

### Omission Of Feed Ingredients

#### *Salt*

Animals have an innate desire to consume salt. Feeding a salt-deficient diet will lead to increased feather pecking and a decline in egg production.

Most animal feeds will contain added salt, usually in the form of sodium chloride. Iodine is rarely added as a separate ingredient. Instead, iodized salt is routinely used. Cobalt iodized salt is often used in diets for swine and ruminants, and this can also be used without any problems for poultry. This type of salt is usually blue.

Sodium is an essential nutrient, playing a major role in maintaining body fluid volume, blood pH, and proper

osmotic relationships. A continuously low intake of salt can cause a loss of appetite. Sodium deficiencies adversely affect utilization of dietary protein and energy, and interfere with reproductive performance.

Chlorine is also an essential nutrient. Hydrogen chloride (HCl) released from the true stomach (proventriculus) is important in digestion. Chlorine also plays a role in maintaining osmotic balance in body fluids. Birds deficient in chlorine are more nervous, showing increased sensitivity to sudden noise.

#### *Calcium*

The egg shell is composed primarily of calcium carbonate. The pullet's requirement for calcium is relatively low during the growing period, but when the first eggs are produced, the need is increased at least four times, with practically all of the increase being used for the production of eggshells. Inadequate calcium consumption will result in decreased egg production and lower egg shell quality.

Hens store calcium in medullary bone, a specialized bone capable of rapid calcium turnover. As calcium stores are depleted, bones become brittle. In severe cases, hens are unable to stand. The condition is known as caged-layer fatigue. Birds on the ground or on litter floors recycle calcium and phosphorus through consumption of feces, and do not have caged-layer fatigue.

Calcium can be supplied in the diet as either ground limestone or oyster shell. Particle size affects calcium availability. Usually the larger the particle size, the longer the particle will be retained in the upper digestive tract. This means that the larger particles of the calcium source are released more slowly, and this may be important for the continuity of shell formation, especially in the dark period when birds do not ordinarily eat.

Periodically, dolomitic limestone is offered to the feed industry. However, dolomitic limestone (which is used in the steel industry) should never be used in poultry diets. Dolomitic limestone contains at least 10% magnesium, and this complexes with calcium or competes with calcium for absorption sites in the intestines. The consequence of feeding dolomitic limestone is induced calcium deficiency.

Young birds should not be fed a high calcium layer diet because the calcium/phosphorus ratio will be unbalanced, resulting in increased morbidity or mortality.

### *Vitamin D<sub>3</sub>*

Vitamin D is required for normal calcium absorption and utilization. If inadequate levels of vitamin D are fed, induced calcium deficiency quickly results and egg production decreases.

Feed grade vitamin D comes in two forms, D<sub>2</sub> and D<sub>3</sub>. In most animals, both are equally potent. In birds, however, D<sub>3</sub> is substantially more active than D<sub>2</sub>. In poultry diets, therefore, vitamin D must be supplied in the form of D<sub>3</sub>.

### *Protein*

Dietary requirements for protein are actually requirements for the amino acids that constitute the protein. There are 22 amino acids in body proteins, and all are physiologically essential. Poultry cannot synthesize some of these, or cannot synthesize them rapidly enough to meet the metabolic requirement. Therefore, these amino acids must be supplied in the diet. Amino acid requirements vary considerably according to the productive state (i.e., growing, laying eggs, etc.), age, type, breed, and strain. Methionine is the amino acid most often deficient in laying rations.

When pullets begin laying, there is an increase in protein, vitamin and mineral requirements per day due to deposition in the egg. If dietary protein is too low or the amino acid requirements are not met, poor egg production and hatchability will occur.

### *Fat*

Dietary fat is a source of energy and of linoleic acid, an essential fatty acid. A deficiency of linoleic acid will adversely affect egg production. Dietary fats also serve as “carriers” of fat-soluble vitamins, and some fat is necessary for absorption of vitamins. In fact, impairment of the absorption of fat-soluble vitamins (A, D, E, and K) is the most serious consequence of a dietary deficiency of fat.

## **Toxicoses**

### *Salt*

Although the salt requirement of birds is relatively low, adequate levels are essential, and excessive amounts are highly toxic and reduce egg production. Birds require a sensitive balance between necessary and toxic levels of salt. See Table 1.

Excess dietary salt intake readily causes wet droppings and wet litter. Several feed ingredients, such as fish meal, corn gluten meal, meat meal, whey and sunflower meal contain high levels of sodium. When such ingredients are used, the level of supplemental salt (NaCl) in the diet must be reduced.

### *Phosphorus*

The nutritional role of phosphorus is closely related to that of calcium. Both are constituents of bone. The ratio of dietary calcium to phosphorus affects the absorption of both these elements; an excess of either one impedes absorption and can reduce egg production, shell quality and/or hatchability.

In addition to its function in bone, phosphorus plays a primary role in carbohydrate metabolism, is active in fat metabolism, and helps to regulate the acid-base balance of the body.

### *Vitamin D<sub>3</sub>*

Excess vitamin D<sub>3</sub> leads to increased calcium absorption resulting in hypercalcemia which may reduce egg production. Most animal species appear to be able to tolerate 10 times their vitamin D<sub>3</sub> requirement for long periods of time. For short-periods of time, poultry can tolerate up to 100 times their requirement. An excess of vitamin D<sub>3</sub> in the diet, therefore, is unlikely.

### *Mycotoxins*

Molds can produce mycotoxins which adversely affect egg production and general health. They can interfere with the absorption or metabolism of certain nutrients, depending on the particular mycotoxin. Apparent calcium and/or vitamin D<sub>3</sub> deficiencies can occur when mycotoxin contaminated feeds are given to

laying hens. In addition, some have hormonal effects which can cause a decline in egg production.

The major mycotoxin of concern with corn is aflatoxin, produced by the mold *Aspergillus flavus*. The mold infects corn both in the field and in storage. Aflatoxin fluoresces under ultraviolet light, so its presence can be detected by examining grain under "black light". Other mycotoxins sometimes associated with corn and other grains are zearalenone (F-2 toxin), ochratoxin, T-2 toxin, vomitoxin, and citrinin. More than 300 mycotoxins have been identified.

### *Botulism*

Botulism is an acute intoxication caused by consumption of a neurotoxin produced by the bacterium *Clostridium botulinum*. It commonly occurs when birds consume decomposing carcasses, spoiled feed or other decaying organic materials. Ponds and other stagnant water sources are often areas of decaying materials that may contain this toxin.

### *Other toxins*

Numerous plants are toxic to varying degrees if plant parts or seeds are consumed by the bird. Production, hatchability, growth, and livability may be reduced. Examples of these plants include croton, nightshade, coffee weed, cotton seeds, chick peas, vetches, and many ornamentals. Other potential causes of problems include pesticides, herbicides, disinfectants, fertilizers, drugs, antibiotics, and other chemicals, including oils and antifreeze.

### **Anticoccidials**

Anticoccidials (to prevent coccidiosis) are commonly used in diets for replacement pullets, meat birds and young breeding stock that are reared on litter floors. Anticoccidials are not given to commercial laying hens.

### *Nicarbazin*

Nicarbazin is an anticoccidial drug that reduces reproductive performance when it's inadvertently added to layer or breeder diets at normal anticoccidial levels. The yolk membranes are weakened, resulting in mottling of the yolk. Nicarbazin fed to brown-egg layers

turns their eggshells white within 48 hours, although this is completely reversible when the product is withdrawn from the feed. Even low levels of nicarbazin can cause some loss in shell color, mottling of egg yolks (see Fact Sheet PS-24, "Egg Quality"), and a decline in hatchability.

### *Monensin*

Monensin has been the most successful of the anticoccidials. Monensin, and other ionophore anticoccidials, have an adverse effect on egg production when used in conjunction with low protein diets.

### **Management Mistakes**

#### *Out of feed*

If hens are out of feed for several hours, a decline in egg production will probably occur. The amount of decline will be related to the time without feed. Be sure that all the birds have access to an adequate supply of a complete feed which meets all their nutritional requirements.

Feed stored on the farm longer than two weeks may become moldy. If feed becomes wet it should be discarded. In addition, vitamin potency decreases with prolonged storage.

#### *Out of water*

Water is often taken for granted, and yet it is probably the most essential nutrient. Water is by far the single constituent of the body, and, in general, represents about 70% of total body weight. Access to water is very important, and a lack of water for several hours will probably cause a decline in egg production. Hens are more sensitive to a lack of water than a lack of feed.

The amount of water needed depends on environmental temperature and relative humidity, diet composition, and rate of egg production. It has been generally assumed that birds drink approximately twice as much water as the amount of feed consumed on a weight basis, but water intake varies greatly, especially in hot weather.

### *Inadequate daylength*

Hens need about 14 hours of daylength to maintain egg production. The intensity of light should be sufficient to allow a person to read newsprint at bird level. The decreasing daylength during the Fall and shorter daylengths in the Winter would be expected to cause a severe decline, or even cessation, in egg production unless supplemental light is provided. When production ceases, the birds may also undergo a feather molt. Hens exposed to only natural light would be expected to resume egg production in the Spring.

### *High house temperatures*

High environmental temperatures pose severe problems for all types of poultry. Feed consumption, egg production, egg size, and hatchability are all adversely affected under conditions of severe heat stress. Shade, ventilation, and a plentiful supply of cool water help reduce the adverse effects of heat stress.

## **Ectoparasites**

An ectoparasite is a parasitic organism that feeds on the exterior of the body of the host.

### *Northern fowl mite*

The northern fowl mite (*Ornithonyssus sylviarum*) is the most common of the poultry mites. Refer to the publication PS-10, (“Common Continuous External Parasites of Poultry”), for information on identification and control of Northern fowl mites.

Northern fowl mites are blood suckers and are irritating to poultry. Anemia occurs in heavily parasitized birds, reducing feed efficiency, egg production, and ability to withstand and overcome diseases.

### *Lice*

Several species of chewing lice may be found on chickens, especially those in small flocks or on range. Refer to publication PS-10, (“Common Continuous External Parasites of Poultry”), for information on identification and control of lice.

Chicken lice feed on dry scales, feathers, or scabs on the skin. As lice crawl over the bird, their mouth parts and sharp claws scratch the skin. The constant irritation causes the bird to become nervous and behave abnormally, causing a general unthriftiness and unkempt appearance in the bird. Egg production in infested flocks may drop as much as 10%, although some heavy infestations have caused egg production to fall as much as 20%.

### *Fleas*

Stick-tight fleas are sometimes a severe problem in home flocks and may be difficult to prevent or eradicate. The adult female flea attaches to the skin around the face and head, causing severe irritation and, in some cases, blindness. Refer to publication PS-10, (“Common Continuous External Parasites of Poultry”), for information on identification and control of stick-tight fleas.

## **Endoparasites**

An endoparasite is a parasite that lives and feeds inside the host animal.

Heavy infestations of endoparasites can cause unthriftiness, poor feed efficiency, poor growth, reduced egg production, and mortality in severe infestations. Infected birds may also be more susceptible to various diseases and stresses.

### *Nematodes*

Nematodes, or roundworms, are elongated, cylindrical, unsegmented endoparasites. There are many species of roundworms, each tending to infect a specific area of the gastrointestinal tract. Refer to publication PS-18, (“Nematode Parasites of Poultry”), for identification and control of nematodes.

### *Tapeworms*

Tapeworms (cestodes) are white or yellowish ribbon-like segmented flat worms. They vary in size from 0.17 to 12 inches in length. Although tapeworms do not produce extensive lesions or damage to the intestines, they are nutritional competitors. A cestode does not digest its own food. Instead, it anchors itself to the inner wall of the bird's intestines, letting its

segmented body dangle in the flow of digested material, absorbing nutrients before they can be utilized by the host. A variety of commercially available anthelmintics will effectively and safely eliminate both nematodes and cestodes from poultry.

## Diseases

### Fowl Pox

Fowl pox is a viral disease of chickens characterized by scab-like lesions on the skin of the unfeathered body parts and/or on diphtheritic (wet) membranes lining the mouth or air passages. Infection with the fowl pox virus will cause the chickens to have poor growth, poor feed conversion and a precipitous fall in egg production. Fowl pox may affect any age bird. It is transmitted by direct contact with an infected chicken or by mosquitos. Table 2.

For more information on fowl pox, refer to publication VM66, "Prevention and Control of Fowl Pox in Backyard Chicken Flocks".

### Coccidiosis

Coccidiosis is a protozoan disease characterized by enteritis and diarrhea in poultry. Unlike the organisms which cause many other poultry diseases, coccidia are almost universally found wherever chickens are raised. Coccidiosis outbreaks vary from very mild to severe infections. See Table 2.

Individual strains of cocci attack birds differently, resulting in diverse symptoms. The overall symptoms may be one or more of the following: bloody droppings, high mortality, general droopiness, emaciation, a marked drop in feed consumption, diarrhea and a drop in egg production in layers.

It is common to add a coccidiostat in the feed of broilers. In addition, live vaccines are currently available.

### Infectious bronchitis

Infectious bronchitis is a highly contagious respiratory disease. The disease is caused by a virus which is moderately resistant, but can be destroyed by many common disinfectants.

Infectious bronchitis occurs only in chickens (Infectious bronchitis is different from Quail bronchitis which affects Bobwhite Quail). All ages of chickens are susceptible to infectious bronchitis. In laying hens it is characterized by respiratory signs (gasping, sneezing, coughing) and a marked decrease in egg production. Egg quality is also adversely affected. Low egg quality and shell irregularities (soft-shelled or misshapened) may persist long after an outbreak. Chickens that have had infectious bronchitis, especially during the first week of life, may never be good layers.

There is no effective treatment for infectious bronchitis, although broad spectrum antibiotics for 3 to 5 days may aid in controlling secondary bacterial infections. Vaccines can be used for prevention, but they are only effective if they contain the right serotypes of virus for a given area. Infectious bronchitis vaccine is often combined with Newcastle vaccine in the same vial.

### Newcastle disease

Newcastle disease is caused by a virus. The viruses vary in pathogenicity and are classified as lentogenic (mildly virulent), mesogenic (moderately virulent), and velogenic (markedly virulent).

Newcastle disease is characterized by a sudden onset and rapid spread through the flock. In adult laying hens clinical signs can include depression, loss of appetite, decreased water consumption, and a dramatic decline in egg production. Production may drop to zero. Newcastle disease runs its course in 10 to 14 days, but the hens do not come back into full production for 5 to 6 weeks.

There is no treatment for Newcastle disease. Antibiotics can be given for 3 to 5 days to prevent secondary bacterial infections. Chickens and turkeys can be immunized against Newcastle disease by vaccination.

### Avian influenza

Avian influenza is a viral disease affecting the respiratory, digestive and/or nervous systems of many species of birds. Avian influenza viruses are classified based on severity of disease, ranging from apathogenic to highly pathogenic. The mildly pathogenic form

produces listlessness, respiratory signs (sneezing, coughing), and diarrhea. The level of mortality is usually low. The highly pathogenic form of avian influenza produces facial swelling, cyanosis, and dehydration with respiratory distress. Dark red/white spots (cyanosis/ischemia) develop on the legs and combs of chicks. Mortality can range from low to near 100%. The decrease in egg production is related to the severity of the disease and can be severe.

There is no specific treatment for avian influenza. Recovery is rather spontaneous. Birds slaughtered 7 days after infection often have no significant increase in condemnations.

Infected flocks will be quarantined by the State. Quarantine is continued until the flock is depopulated. The course of the disease is 10 to 14 days, but recovered birds continue to shed the avian influenza virus in feces for 3 or 4 weeks. Eggs from layers are safe to eat, but the shell should be wash and sanitized. The poultry litter or manure should be composted before application to cultivated lands.

For more information on avian influenza refer to publication PS-38, "Avian Influenza in Poultry".

### **Avian encephalomyelitis**

Avian encephalomyelitis (epidemic tremors) is a viral disease usually affecting young poultry. It is characterized by incoordination and tremors, especially of the head and neck in chicks, and elevated mortality levels. Chicks that recover may later develop cataracts after sexual maturity. In affected hens, decreases in egg production and hatchability are noted.

Laying hens seldom show clinical signs when infection is going through the flock. However, good production records often reveal a slight drop in egg production (5 to 20%) lasting no more than two weeks. In breeding flocks, a corresponding decrease in hatchability is also noted.

There is no effective treatment. All replacement breeder and layer pullets should be immunized.

### ***Mycoplasma gallisepticum* infection**

*Mycoplasma gallisepticum* infection (chronic respiratory disease, PPLO infection, airsacculitis, MG) is characterized by respiratory distress (coughing, sneezing, snicks, rales, discharge from eyes and nose). Feed consumption and egg production decline in laying hens. Mortality is usually low but there may be many unthrifty birds.

The organism may be present in a flock and cause no disease until triggered by stress, e.g., changes in housing, management, nutrition, or weather.

Many broad spectrum antibiotics have been used for treatment and will suppress losses. However, relapses often occur when treatment is discontinued. Most antibiotics are given in feed or water, preferably in water. Tylosine and tetracyclines have been used extensively for treatment. Injectable antibiotics may be more effective if the disease is advanced and if the flock is small enough to be treated individually. FDA withdrawal periods for respective medications used must be strictly observed to avoid residual chemicals in the eggs and meat. Live and inactivated vaccines also are commonly used to reduce the adverse effects of the disease.

### **Fowl cholera**

Fowl cholera is an infectious bacterial disease of poultry. With an acute outbreak, sudden unexpected deaths occur in the flock. Laying hens may be found dead on the nest. Sick birds show anorexia, depression, cyanosis, rales, discharge from eyes and nose, white watery or green mucoid diarrhea, and egg production is decreased.

As fowl cholera becomes chronic, chickens develop abscessed wattles and swelling of joints and foot pads. Cheesy pus may accumulate in the sinuses under the eyes.

Flocks can be treated with a sulfa drug. Sulfa drugs are not FDA approved for use in pullets older than 14 weeks or for commercial laying hens. Sulfa drugs cause residues in meat and eggs. Prolonged use of sulfa drugs is toxic and causes a decrease in production in laying hens. Antibiotics can be used, but require higher levels and longer medication to stop the outbreak.

Where fowl cholera is endemic, live and/or inactivated vaccines are recommended. Do not start vaccinating for fowl cholera until it becomes a problem on the farm and a diagnosis is confirmed.

### Infectious coryza

Coryza is a respiratory disease of chickens. Common clinical signs include swelling and puffiness around the face and wattles, a thick sticky discharge with a characteristic offensive odor from the nostrils, labored breathing, and rales. There is a drop in feed and water consumption as well as egg production.

Sulfadimethoxine (Albon) is the preferred treatment for infectious coryza. If Albon fails or is not available, sulfamethazine, sulfamerazine, or erythromycin (Gallimycin) can be used as alternative treatments. The sulfa drugs are not FDA approved for pullets older than 14 weeks or for commercial laying hens.

A vaccine for infectious coryza is available. It is given subcutaneously (under the skin) on the back of the neck. Chicks are usually vaccinated four times, starting at 5 weeks of age (i.e., at 5, 9, 15, and 19 weeks with at least 4 weeks between injections). Vaccinate again at 10 months of age and twice yearly thereafter.

### Other Problems To Consider

There are a variety of other problems which can cause an apparent drop in egg production. They include:

- 1) Predators and snakes consuming the eggs.
- 2) Egg-eating by hens in the flock.
- 3) Excessive egg breakage.
- 4) Hens which are able to run free hiding the eggs instead of laying in nests.

### Summary

There are numerous factors which may adversely affect egg production in backyard chicken flocks. If a drop in egg production occurs, investigate the cause by answering questions that follow also refer to Tables 1 and 2, sick and recently dead birds to a state diagnostic lab, and/or consult with your County Extension Agent or a veterinarian.

- 1) How old are the birds?
- 2) How much feed are the birds consuming daily?
- 3) Has the level of feed consumption changed lately?
- 4) Has there been a change in the type of feed used?
- 5) Is the feed moldy?
- 6) How much light do the birds receive daily? Has it changed?
- 7) What is the light source?
- 8) What is the condition of the poultry houses?
- 9) Are the birds getting enough clean water?
- 10) What is the condition of the birds?
- 11) How active are the birds?
- 12) What is shell quality like?
- 13) What is interior egg quality like?
- 14) Are there any signs of disease?
- 15) Are the birds crowded?
- 16) Are there any signs of parasites?
- 17) Do the birds have access to different plants?
- 18) Have any pesticides or herbicides been used in the area?

#### State Diagnostic Laboratories:

- 1) Live Oak Diagnostic Lab  
PO Box Drawer O  
912 Nobels Ferry Rd  
Live Oak, FL 32060  
tel: 904/362-1216
- 2) Kissimmee Diagnostic Lab  
PO Box 460  
Kissimmee, FL 32641  
tel: 407/846-5200

**Table 1.** Non-infectious causes of reduced egg production.

| CAUSES OF DECLINE               | SIGNS/SYMPTOMS   |
|---------------------------------|--|
| <b>OMISSION OF INGREDIENTS</b>  |  |
| <i>Salt</i>                     | Nervous flock, increased pecking, feathers in digestive tract  |
| <i>Calcium</i>                  | Birds down in cages, increased incidence of shell-less eggs  |
| <i>Vitamin D<sub>3</sub></i>    | Increased mortality from calcium depletion, increased shell-less eggs  |
| <i>Protein</i>                  | Increased nervousness, increased mortality (peckouts), poor albumen quality, feather eating                                  |
| <i>Fat</i>                      | Low body weight gains, drop in egg size  |
| <b>TOXICOSES</b>                |  |
| <i>Salt</i>                     | Increased mortality due to urolithiasis, lowered feed intake   |
| <i>Phosphorus</i>               | Lower feed intake, soft bones, thin shells, increased shell-less eggs  |
| <i>Vitamin D<sub>3</sub></i>    | Increased shell-less eggs, soft bones  |
| <i>Mycotoxins</i>               | Nervousness, mouth lesions, fatty livers, biliary hyperplasia in liver tissue, reduced feed intake, thin shell               |
| <i>Botulism</i>                 | Weakness, limp neck, neck feathers easy to pull out, prostration   |
| <b>ANTICOCCIDIALS</b>           |  |
| <i>Nicarbazin</i>               | Shell-less eggs, loss of pigment of brown eggs, lowered hatch, of fertile eggs   |
| <i>Monensin</i>                 | Reduced feed consumption, birds lack coordination  |
| <b>MANAGEMENT MISTAKES</b>      |  |
| <i>Out of feed</i>              | Nervous flock, decreased feed consumption  |
| <i>Out of water</i>             | Blue combs, birds gathered around waterers   |
| <i>Inadequate daylength</i>     | Unusual pattern of egg production  |
| <i>High ambient temperature</i> | Reduced egg size, reduced feed consumption, increased water consumption, panting   |
| <b>ECTOPARASITES</b>            |  |
| <i>Northern fowl mite</i>       | Nervousness, finding mites on birds (usually around the cloaca)  |
| <i>Lice</i>                     | Nervousness, weight loss, reduced feed intake  |
| <i>Stick-tight fleas</i>        | Fleas embedded in the fleshy parts of the chickens's head around the eyes, ulceration and irritation of skin around the eyes |
| <b>ENDOPARASITES</b>            |  |
| <i>Nematodes (roundworms)</i>   | Unthriftiness, poor feed efficiency, increased mortality (in severe infestations)  |
| <i>Cestodes (tapeworms)</i>     | General unthriftiness, dry and unkempt feathers, hearty appetite but weight loss   |



**Table 2.** Typical diagnostic signs associated with common diseases and conditions which can cause a drop in egg production.

| DISEASE  | SIGNS  |  |  |
|--|--|--|--|
| Fowl pox   | - scab-like lesions on the unfeathered body parts (especially face and comb)   |  |  |
| Coccidiosis  | - characteristic gross lesions in the intestinal tract<br>- higher mortality in some cases<br>- bloody droppings   |  |  |
| Infectious bronchitis  | - coughing, sneezing, and rales<br>- egg production drops markedly (by as much as 50%).<br>- soft-shelled or misshapen eggs<br>- watery egg white<br>- poor pigmentation of brown-shelled eggs   |  |  |
| Newcastle disease  | <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> Mild form:<br/> - reduction in feed and water consumption<br/> - dramatic drop in egg production<br/> - decreased shell quality<br/> - increased mortality </td> <td style="width: 50%; vertical-align: top;"> Acute form:<br/> - respiratory distress<br/> - twisted neck </td> </tr> </table> | Mild form:<br>- reduction in feed and water consumption<br>- dramatic drop in egg production<br>- decreased shell quality<br>- increased mortality | Acute form:<br>- respiratory distress<br>- twisted neck  |
| Mild form:<br>- reduction in feed and water consumption<br>- dramatic drop in egg production<br>- decreased shell quality<br>- increased mortality | Acute form:<br>- respiratory distress<br>- twisted neck  |  |  |
| Avian influenza  | <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> Mildly pathogenic form:<br/> - listlessness<br/> - sneezing, coughing<br/> - diarrhea </td> <td style="width: 50%; vertical-align: top;"> Highly pathogenic form:<br/> - facial swelling<br/> - dark red/white spots on legs and combs<br/> - respiratory distress </td> </tr> </table>         | Mildly pathogenic form:<br>- listlessness<br>- sneezing, coughing<br>- diarrhea  | Highly pathogenic form:<br>- facial swelling<br>- dark red/white spots on legs and combs<br>- respiratory distress |
| Mildly pathogenic form:<br>- listlessness<br>- sneezing, coughing<br>- diarrhea  | Highly pathogenic form:<br>- facial swelling<br>- dark red/white spots on legs and combs<br>- respiratory distress   |  |  |
| Avian encephalomyelitis  | - seldom show clinical signs<br>- slight, transient drop in egg production   |  |  |
| <i>Mycoplasma gallisepticum</i>  | - coughing, sneezing, snicks, rales, nasal and ocular discharge<br>- decrease in feed consumption and egg production   |  |  |
| Fowl cholera   | - sudden unexpected deaths<br>- reduction in feed consumption<br>- swollen wattles<br>- nasal and ocular discharge<br>- cyanosis of head<br>- white water or green mucoid diarrhea   |  |  |
| Infectious coryza  | - swelling and puffiness around the face and wattles<br>- thick, foul-smelling nasal discharge<br>- labored breathing<br>- decrease in feed and water consumption  |  |  |